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This proposal for a model curriculum based on conceptions of performance criteria (behavioral objectives) consists of nine sections (1) the rationale for a new professionalism in education; (2) the general structure, function, and assumptions of the proposed program; (3) performance criteria as a planning principle for developing teaching skill competencies in three areas subject matter, presentation, and decision-making; (4) a systems conceptualization of the program including a system approach to evaluation and visual models of the proposal in operation; (5) the problems of integrating a performance criteria approach into the traditional university; (6) the preservice-inservice continuum including differentiated staffing with varying levels of responsibility and specific areas of specialization; (7) conceptions of teacher placement with continued school-of-education followup; (8) 60 pages of summary rationale and performance criteria for three areas: cornerstone (human relations and behavioral), content (aesthetics, language arts, social studies, science, mathematics, foreign languages, pre-school), and service (evaluation skills, media, supervision); (9) 300 pages of appendixes containing examples of performance criteria (with specific behavioral objectives, instructional alternatives, and evaluation measures) in each of the above areas. An addendum on the program's urban education emphasis and a 200-item bibliography are included. (ED 018 677) is a related document.) (JS)

MODEL ELEMENTARY TEACHER EDUCATION PROGRAM

School of Education
University of Massachusetts
Amherst, Massachusetts 01002

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Final Report

Contract No. OEC-0-8-089023-3312(010)

A Proposed New Program for Elementary Teacher Education at the University of Massachusetts

Principal Investigator - Dwight W. Allen
Project Director - James M. Cooper

University of Massachusetts
Amherst, Massachusetts

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INTRODUCTION

Introduction and Summary of Organization

The elementary teacher of the future faces many new and little understood challenges. Organizing a totally new curriculum for teachers based on conceptions of performance criteria has required a complex of approaches and many new ways of integrating material on teacher education. This introduction is designed as a cognitive map of the structure of the total proposal. The total organization of the proposal is reviewed here to aid the reader in selecting his own approach to the proposal. In line with concepts of performance criteria, we believe that there are many alternative ways of organizing material. As such, we suggest that the reader use this summary as a means for determining in what order he himself wishes to read the material presented here. The organization that is presented represents our conception of the "flow" of material, but we believe that a procedure analogous to branching in programmed texts may be an appropriate procedure for the individual who brings different understandings, background, and experience to the study of this proposal.

The proposal is organized as follows:

Section I. NEEDED: A NEW PROFESSIONALISM IN EDUCATION. In this section a rationale for "radicalization" of today's schools is presented. It is maintained that education, to survive in the rapidly changing times ahead, must find new ways to adapt with the environment. However, education for the future requires more than adaptation, it also requires a new professionalism which demands that education and teachers provide leading roles for the society of the future. This philosophical introduction also maintains that performance criteria offer one important approach to educational change and improvement in the future. (Pages 5-9.)

Section II. ASSUMPTIONS AND PARAMETERS OF THE MODEL ELEMENTARY TEACHER EDUCATION PROGRAM. Two main emphases will be found in this section which are designed to outline the general structure, function, and assumptions of the total proposed program. The section begins with a list of basic assumptions underlying the total proposal. This is followed by a visual presentation of the program with an accompanying textual explanation.

Section III. PERFORMANCE CRITERIA AS A PLANNING PRINCIPLE FOR A NEW MODEL IN TEACHER EDUCATION. This section discusses performance criteria as a planning principle for developing a new model of teacher education. It suggests the need for consideration of a "hierarchy of teaching competencies," a system which illustrates the need for teachers to have three basic areas of skill competencies: 1) subject matter competency; 2) presentation competency; and 3) decision-making competency. (Pages 16-22.)

Section IV. A SYSTEMS CONCEPTUALIZATION OF THE MODEL ELEMENTARY TEACHER EDUCATION PROGRAM. Crucial to the implementation of a performance curriculum is an organization which gives coherence and structure to an educational program. Traditional school and credit offerings give no guidance in this regard. Systems analysis was found to offer a set of basic understandings which provide a useful and meaningful organization of the many diverse elements of a teacher education program. In this section is a visual model of how a student teacher or an inservice teacher would enter into and exit from the program. Essential to the success of any program is adequate evaluation. A new system approach to evaluation is presented in this section in which a conceptual model has been devised to determine activities and necessary skill components for teachers in the program. There is also a visual model of the METEP proposal in operation. This section of the proposal is perhaps one of the most important and should be read early in the examination of the material presented here. (Pages 23-48.)

Section V. THE SCHOOL OF EDUCATION AND THE UNIVERSITY AS A WHOLE. Performance criteria approaches are based on the ability of the student to act. A student may take as much or as little time as he wishes to move through these criteria. This may be compared with the model of the typical university which is based on a time and credit system. Needless to say, implementing a performance curriculum in a university setting presents some complex issues of planning. This section explores the issue of integrating a performance criteria approach into the traditional university.

Section VI. THE PRESERVICE - INSERVICE CONTINUUM. A major concept of the METEP is that the schools of the future can no longer think of preservice teacher training as a completely separate function from inservice training. Rapid change in the future will demand almost constant inservice training programs for teachers. A new model embodying conceptions of performance criteria and differentiated staffs illustrate how teacher training may be viewed as a continuum of experiences rather than a series of distinct and non-continuous steps. Important in this model are four basic elements of a reorganized educational setting: 1) varying levels of responsiblity; 2) specific areas of specialization; 3) careful initial and followup placement of all teacher candidates; 4) a system of strategies and systems to support the proposed program.

Section VII. PLACEMENT SUBSYSTEM. Supplementing the preservice - inservice continuum are conceptions of teacher placement which illustrate the manner in which a school of education remains tied to its students over time. No longer does the act of placement mean a termination of the relationship between a teacher and the institution which educated him. Rather, a new and perhaps more fully developed relationship occurs in which the teacher stays in contact with the school, provides feedback information and data which may help change the school, and also gains new data input from the school so that his performance is constantly updated and changed. (Pages 72-75.)

Section VIII. AREAS OF TEACHER PREPARATION. This section, more than half the body of this proposal, presents the summary rationale for the "cornerstone" criteria of elementary education (human relations and behavioral skills), subject-matter performance, and supplementary criteria (evaluation, media, and supervision). In essence, these areas are the real content of the proposal and are presented in a series of descriptions of the approach to a performance criteria curriculum.

The ideas in Section VIII range from the traditional to the "far-out." It is recognized that all that is presented here will never become operational. Rather, a series of innovative ideas and procedures is presented which will be modified and eventually become the structure of an actual new curriculum to be implemented at the University of Massachusetts during the coming year. As such, the material in this section should be considered as a document in transition. However, this itself is in tune with the philosophy of performance criteria which, of necessity, are ever changing and flexible to meet the needs of the specific individual at a specific point in time.

A few highlights of this section might be noted. The section on human relations emphasizes the notion that specific behavioral criteria can be established for many "fuzzy" concepts such as empathy, flexibility, or self-awareness. Yet mixed with this approach are the philosophies of Martin Buber and Michael Polanyi. (Pages 77-87.) The behavioral skills section is based on the well established, but still developing technical skills approach using microteaching procedures. (Pages 88-92.) The content areas offer new approaches to imparting subject matter to teacher trainees. The language arts (pages 100-1), social studies (pages 102-9), and aesthetics (pages 93-99) materials offer examples of what might be considered the beginning of a revolutionary approach to subject matter. Supplementing these materials are sections on the use of evaluation (pages 127-33), media (pages 134-36), and supervision (pages 137-8) which are believed to be some of the first attempts to apply specific performance criteria to areas which before have been considered in such a wholistic fashion that elementary teachers often ignore or fail to understand them adequately.

Section IX. APPENDICES I AND II. While not in the body of this report itself, it is believed that it is essential that those interested in fully understanding the conceptions of this proposal should examine in detail the appendices of this report which provide examples of performance criteria and additional rationale for the information presented. One helpful approach for using the Appendices might be for the interested reader(s) to study performance criteria from the Appendices as they read material from the body of Section VII. In this way, maximum integration of the ideas expressed may be possible. These examples should not be construed as a complete teacher education curriculum. They are incomplete and represent only example performance criteria.

Addendum

A special area of concentration will be in the area of urban education. Special performance criteria in the field will be constructed to supplement the regular areas of teacher preparation. Because of the late arrival of qualified staff in the area of urban education almost no mention is made in the main report. However, urban education will be a major part of METEP when it is operationalized.

SUMMARY COMMENTS

Due to the length and complexity of this proposal it has been suggested that the reader develop his own "program" for integrating the proposal in his own mind. A suggested set of readings for those who want a capsule summary of the METEP would be the following:

1. Assumptions and parameters of the METEP provide an overall picture of the total proposal. (Section II.)
2. The systems conceptualization describes how the program would function as an organizational unit. (Section IV.)
3. The material on human relations, behavioral skills and one subject matter area of interest provides a background of information on the method of approach in applied areas. (Section VIII.)
4. Concurrently with 3, the reader may wish to examine related performance criteria from the Appendices with Section VIII.

NEEDED: A NEW PROFESSIONALISM IN EDUCATION

There can no longer be any doubt that education as a professional endeavor must undergo radical changes in the decades ahead. The present attempts to amend minor improvements to the maze of existing practices are simply not sufficiently bold and imaginative to meet with the rapidly changing needs that face American Education. If meaningful changes are to be made in the profession, we must go beyond the mere development of new variations and old themes. In fact, professionalism in education is likely to die out unless we capitalize on the process of change. We must institutionalize change so that it becomes an integral part of the educational structure, thereby meeting the functional needs of society and individual students as they arise.

The first step that must be taken in the endeavor to institutionalize change is the thorough analysis of educational roles, tasks, structure and objectives. If we are even to begin developing professional competence that is adequate and relevant, we must start with careful consideration of the criteria by which meaningful decisions can be made regarding all aspects of the educational enterprise. All too often we have instituted change without such previous analysis, and thus our innovations have been viewed solely through the rather muddied perspective of traditional systems. If we wish to make education truly responsive to the changing needs of both society and its individuals, we can do so only by paying close attention to goals and their criteria at the outset. To proceed otherwise, as we have indeed been proceeding, is to virtually assure that the traditional will out-survive its usefulness, if only due to inertia. When criteria for success are absent, it is all too easy to hang on to the traditional, which succeeds under the only remaining criterion -- survival.

The recent efforts to distinguish professional from nonprofessional tasks in the school by introducing clerical and technical assistants exemplify the timorous and backward nature of our current perspectives on professionalism. Our approach is timorous, if not absurd, when we propose the professional vs. non-professional distinction as valid and necessary (which it is) and at the same time make the availability of nonprofessional staff contingent upon the availability of funds. If, in fact, the clerical tasks which teachers perform take up a large proportion of their time, then it becomes a mockery of professionalism to view clerical support as optional in any way. Our current stance is also both timorous and backward when we distinguish professional from nonprofessional tasks, and yet fail to recognize the more relevant and fruitful distinctions that should be made within the teaching profession. Our failure to establish criteria for the wide range of tasks involved in the professional aspects of teaching has left the entire spectrum of talents and competencies among teachers totally unanalyzed. The implication with which even our attempt at innovation is left is that teaching is a single universal function and teachers are interchangeable parts, assignable indiscriminately wherever a "slot" is open. The fact that this notion is patently nonsensical fails to alter the fact that it remains at the foundation of our perspective, guiding even our attempts at innovation.

We know that there are wide differences among teachers in such variables as knowledge of their subject and interests, success at large-group instruction, success at seminar instruction, entertainment value, empathy, experience, to mention only a few. We know that the class of professional teachers represents an enormous diversity of personality characteristics and individual competencies that are related somehow to student learning in various possible instructional situations. But we do not have a staffing pattern in our schools or a training pattern in our teacher education institution that even begins to take such personal and professional differences into account. And we have never brought serious attention to bear on the criteria by which we might assess such differences and relate them to student learning. A role and task analysis of teaching in its various modes would demonstrate the need for both horizontal and vertical distinctions among teachers. In the context of differentiated responsibilities and rewards, we must recognize each teacher as a professional individual and as an individual professional. Our schools must have staff assignments which differentiate both levels and kinds of competence, and our teacher education institutions must gear themselves toward developing different kinds of competence in teachers.

Given our ignorance of functional criteria for teacher performance, we are faced with the assignment and performance of professional roles which we have yet to discover. We simply do not know, at this point, how to distinguish merit in teachers other than by very vague notions of good and bad. What we need to do is to establish structures in our schools and in our teacher education programs that allow levels and kinds of professional competence to be recognized, thereby highlighting abilities which the existing structures blot out. Without a more flexible structure it is impossible even to conceive of the many alternatives available for harnessing existing professional talent to the task of improving student learning.

When education begins to recognize and allow for individual rather than "club member" professionalism, teachers will be able to use their professional competencies beyond the narrow confines of the traditional classroom. They will become active rather than passive agents in the school organization. They will, as they should, participate in determining the school's structure. The senior professional will be in a position to impart his knowledge and skill to the professional novice, the professionally ignorant, and the professionally inept via inservice training. Inservice training could then begin to free itself from the two great fictions which guide its current practice: (1) that graduation from a teacher-training institution bestows life-time professional competence; (2) that initial training inadequacies will have a lifetime of professional consequences.

The training offered teachers before they enter the profession must become more relevant. We need clearer distinctions between the inert and active tasks involved in teaching, a clearer definition of teaching skills and criteria by which they might be assessed. And we need greater acceptance of and attention to the fact that teaching is not reducible entirely to skills, but involves a personal relationship between teacher and pupil. It is up to the profession to assure that the teacher's role is so well delineated that meaningful training for different roles can begin sooner and continue longer for each individual teacher with his own uniquely relevant professional competencies.

As a profession, we are still investing more lip service than labor to the problems of individualizing educational experiences. In practice, we still cling to the out-moded notion that there must be a single way to teach and entire group of students any particular subject matter. We cling to this notion even when we know that a certain type of student studying a particular kind of material with the help of a given teacher might achieve dramatic levels of learning while a different type of student might fail abysmally with the same material and the same teacher, but *succeed* given a slightly different teacher. We must gather a wide variety of aptitude-treatment interaction data to help us learn what *kinds* of students learn most under what *kinds* of conditions. We must learn to match teachers, materials, structures, and students in order to create optimal individual learning situations. To date, we have failed even to persistently explore the possible alternatives for so individualizing instruction. Once understood, the failure becomes inexcusable, a failure to try, another demonstration of our timerity. Yet the thirty student classroom continues unchanged.

If we *would* try, we could discover that much of what we do now that is measurably effective in school is significantly inefficient. We currently have no way of knowing, for example, whether the student who becomes proficient in Spanish in three years might in different instructional settings have become more proficient in two. We must learn to face the professional embarrassment of admitting that the criterion of time by which we currently measure the educational progress of a student is at best only incidentally relevant to the student's ability to perform intellectually. It is simply not enough to know how long a student has warmed a seat in a Spanish class. What educators require are criteria of *performance*, rather than time, in order to make reasonable judgments about the abilities of students and the effects of instructional situations. It is imperative that innovations be undertaken which will overthrow the current reign of time as a criterion of educational success, and establish criteria of performance as the proper guides for educational practice. By discovering means to help students and student-teachers meet demonstrable performance goals, we could discover new alternatives for defining and reaching currently unmeasurable educational objectives. We might then effectively help students to learn by caring about what they learn, and we might motivate students to continue to learn both inside and outside the classroom context. By beginning to make such discoveries, we could finally impart that social relevance to public education which is so painfully lacking in all but the most exceptional classroom.

We must proceed with a far bolder sense of inquiry than we have shown as a profession to date, and we must demonstrate that spirit at all levels of the profession. Such progress as we are making is halting; it limps toward a future that is rushing to meet us. All too often, useful outcomes of educational research fail to get generalized and implemented, and lie like cut flowers along the path to a promising future. Our greatest failures as a profession are due to alternatives unexamined, questions unasked, and paths not taken. Once again it is clear that our future success depends on our taking the necessary steps to institutionalize change to make the process of change part of the educational woodwork. Where might such a process begin?

The development of this model for elementary teacher education constitutes one attempt to make such a start. It represents a concerted attempt to face head-on the challenges of institutionalizing change, social relevance, and individualized instruction within the framework of a teacher education program. Perhaps if we, as educators, can begin to put into practice the ideas which we propose for others, as this model attempts to do, then the entire profession will find the boldness to rush toward a future which it currently seems to fear.

ASSUMPTIONS AND PARAMETERS OF THE MODEL ELEMENTARY TEACHER EDUCATION PROGRAM

The following are the overall goals of the program:

A. The role of the elementary school teacher is changing and will continue to change in the future. We must prepare teachers for change and not stability. The concepts of performance criteria, multiple instructional routes differentiated staffing patterns, and continual inservice training programs appear to offer a meaningful approach to education in the future.

B. Specific performance criteria, based on an analysis of knowledge, skills, and attitudes in the human relations, behavioral, and content areas should be identified to provide a flexible basis for change. When the trainee meets the specified criteria requirements he will have completed the preservice aspect program, regardless of the length of time enrolled. Thus, variable entry and exit points in the programs will occur.

C. Elementary school staffs will begin to differentiate their roles as teachers, thus requiring personnel with different competencies in new and different areas of specialization. Special consideration of differential staffing seems essential in the schools of the future.

D. Since there is no real evidence of the efficacy of any one major strategy of teacher training, this program includes as many widely differing overall strategies as possible in order to provide for examination of training consequences, for insights into relative training efficiencies, and for discovering relative acceptance and appreciation of the processes by trainees.

E. On the assumption not only that each trainee's strengths and weaknesses will differ but also that they will change during the program as a desired consequence of training, one major goal is to provide continuous diagnosis of the needs of each trainee and constant evaluation of the program components designed to meet these needs. Cronbach's concept of Aptitude-Treatment Interaction is an important research component of the program.[1]

F. As a consequence of the above goal, one of the most important emphases throughout planning will be the development of multiple program alternatives, so that there are never fewer than two alternative and equal instructional paths to the same objective.

---

[1] Lee J. Cronbach, "How Can Instruction be Adapted to Individual Differences?" Learning and Individual Differences, ed. Robert M. Gagne, Columbus, Ohio, 1967.

G. In most teacher training programs the university's commitment ceases upon graduation. The graduate rarely receives diagnostic help, but instead is merely evaluated. It is the belief of the designers of this program, on the other hand, that a teacher's training never ends, and therefore a closely knit relationship between preservice and inservice training will be developed. The resources of the University, both technological, such as videotape, and human, such as supervision, will be systematically made available to the graduate. In addition these same resources will be made available to other teachers in the area.

M.E.T.E.P. Parameters

One way of visualizing the METEP is to imagine it as a flowing stream ever growing as it moves toward its goal. (See Figure 1.) The main stream is the METEP. The off-shoots, which also are constantly growing, represent performance criteria in the various areas of competencies which a differential staff in an elementary school might possess. There is nothing fixed about these areas of competencies. It is expected that more competencies would be added as needed, and some might be deleted. At the present, however, these are the areas in which teachers would receive training in our program. Other institutions might define different areas of competencies which they felt to be more appropriate.

The areas of competencies for which performance criteria have been written are:

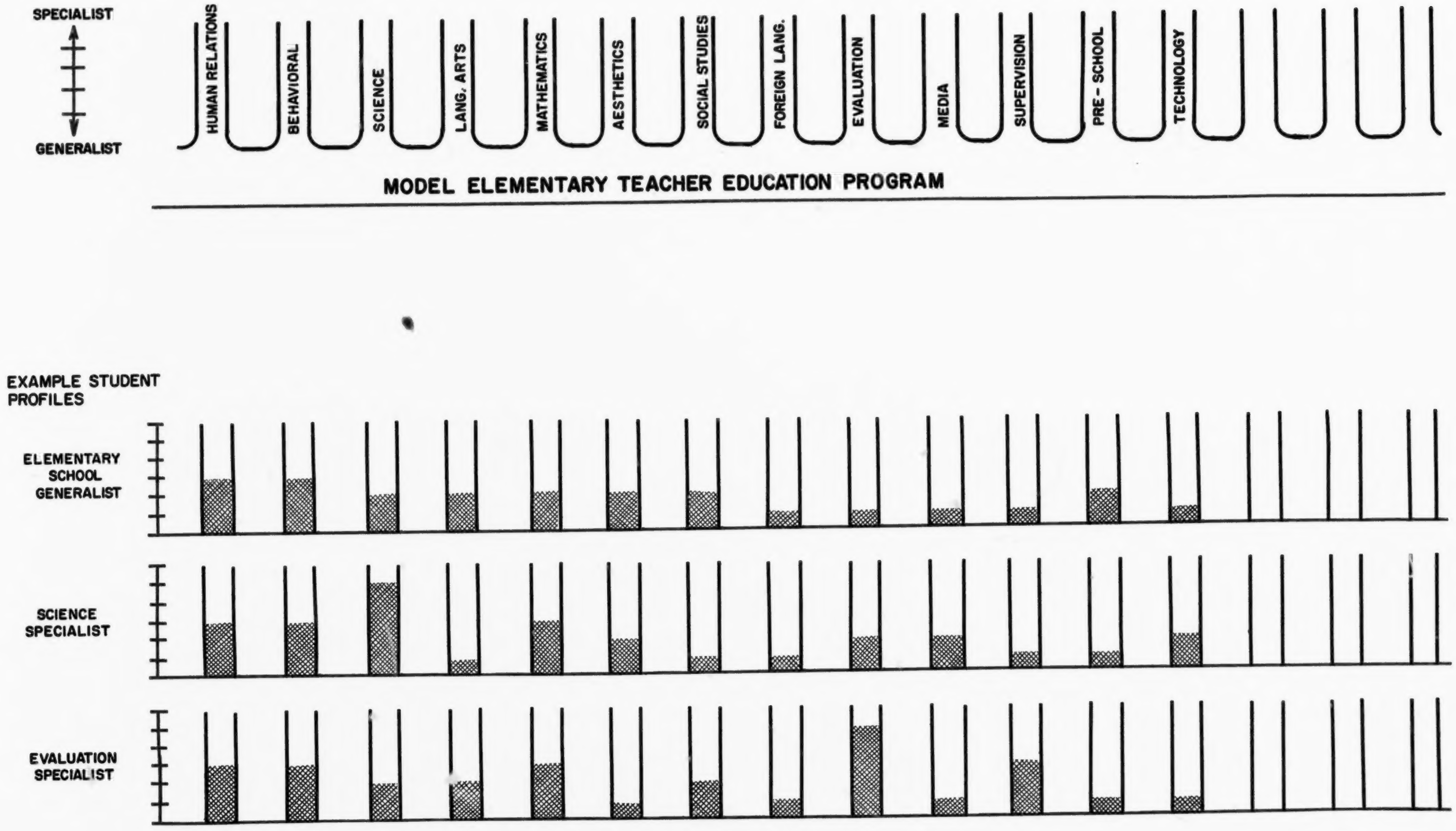
Cornerstone Criteria
1. Human Relations
2. Behavioral Skills

Content Criteria
1. Science
2. Language Arts
3. Mathematics
4. Aesthetics
5. Social Studies
6. Foreign Language
7. Pre-School

Service Criteria
1. Evaluation
2. Media
3. Supervision
4. Technology

Cornerstone Criteria. The first two, human relations and behavioral skills, are considered to be the cornerstone areas for elementary school teachers. It is in these two areas of competencies that the teacher will better understand himself, others, and his relationships to others, and where he will master teaching skills to help him become an effective teacher.

FIGURE - I


SPECIALIST
GENERALIST
HUMAN RELATIONS
BEHAVIORAL
SCIENCE
LANG. ARTS
MATHEMATICS
AESTHETICS
SOCIAL STUDIES
FOREIGN LANG.
EVALUATION
MEDIA
SUPERVISION
PRE - SCHOOL
TECHNOLOGY
MODEL ELEMENTARY TEACHER EDUCATION PROGRAM
EXAMPLE STUDENT PROFILES
ELEMENTARY SCHOOL GENERALIST
SCIENCE SPECIALIST
EVALUATION SPECIALIST

Content Criteria. Science, language arts, mathematics, aesthetics, social studies, and foreign languages represent content areas which form the curricula in most elementary schools. In addition, a special program on pre-school education would be part of our teacher education program drawing upon the content areas. Although these content areas now constitute a traditional elementary school curriculum, the substance of these areas have been modified in order to reflect the underlying principles of the METEP.

Service Criteria. The evaluation area includes performance criteria for the teacher in tests and measurements as well as skills required to make decisions on whether to implement new curricula.

The media area contains criteria from simple to complex understanding of the area of audio-visual media. The supervision area contains criteria for the effective training of supervisors in the elementary school. Criteria in the area of technology also have been written as required supplements to any of the regular areas of concentration. Since our world is increasingly a technological one it is deemed desirable that a rudimentary knowledge of technology become a part of every teacher's training.

Specialist - Generalist. The performance criteria in each area are defined whenever possible, in a hierarchical order from the simple to the more complex. Note in Figure 1 that the words Generalist and Specialist appear along the vertical dimension of the figure. The teacher trainees would have the opportunity to decide if they wanted to specialize in a particular area or to be a generalist elementary school teacher with certain levels of competency in each of the areas. If a trainee elects to specialize in science, for example, he would be required to meet certain minimal criteria in the human relations and behavioral areas, a high level or criteria in the area of science, as well as defined minimal levels in all of the other areas. (See Figure 1) Requiring every teacher, whether he is a generalist or a specialist, to meet a minimal criteria level is a value judgment with which some teacher educators may not agree. The rationale for this requirement is our belief that every elementary school teacher should know at least something about the various areas of competency represented by a differentiated staff, if for no other reason than to improve communication and open-mindedness among the teachers. This decision is an arbitrary one and any institution planning on implementing this model would have to decide this issue for themselves.

Another arbitrary issue regards what minimal performance criteria are to be required for both generalists and specialists. These decisions must be made using the best judgment of the teacher education institution's faculty. After the program has been in operation, data will be available for determining whether the minimal levels are too high or too low, and can be changed as needed.

It should be noted in Figure 1 that the areas of competency are not closed figures, but are open at the top. This symbolizes the fact that in any one area a person could spend a lifetime and not be able to meet all the possible criteria which could be written as more information and skills become known and developed. It should also be noted that there are some blank off-shoots from the main stream. These represent the other areas of competencies which can be developed as the elementary school changes.

Although the future existence of differentiated teaching staffs is one of the basic assumptions of the Model Elementary Teacher Education Program there has been no attempt to define specifically a differentiated staff model. Instead, the areas of competencies that might be possessed by a differentiated staff have been specified. Thus, rather than creating a model which would be only one of many possible differentiated staff models, it was decided to focus on the knowledge and skills that would be required of an elementary school staff, not the definition of the particular roles within a differentiated staff. In this way, the METEP is compatible with the principles of staff differentiation rather than being tied to any one model of staff utilization.

PERFORMANCE CRITERIA AS A PLANNING PRINCIPLE FOR A NEW MODEL IN TEACHER EDUCATION

A. A Conceptual Structure for Performance Criteria

The formulation of performance criteria requires the specification of instructional and program goals in terms of behaviors to be exhibited by the trainee when instruction has been completed. Performance criteria, as we have defined them, are essentially behavioral objectives.[1] They state the behavior expected of the teacher, under what conditions the behavior will be performed, and how the behavior will be evaluated. In addition, at least two instructional alternatives are provided for each performance criterion. Careful formulation of performance criteria liberates the planners from describing the program in terms of traditional "courses." Rather it is recognized that there are alternative paths to reaching many of the criteria. The development of meaningful criteria and the alternative paths for meeting these criteria has been of central concern to the architects of this program.

---

[1] Example Performance Criterion

PROBING QUESTIONS

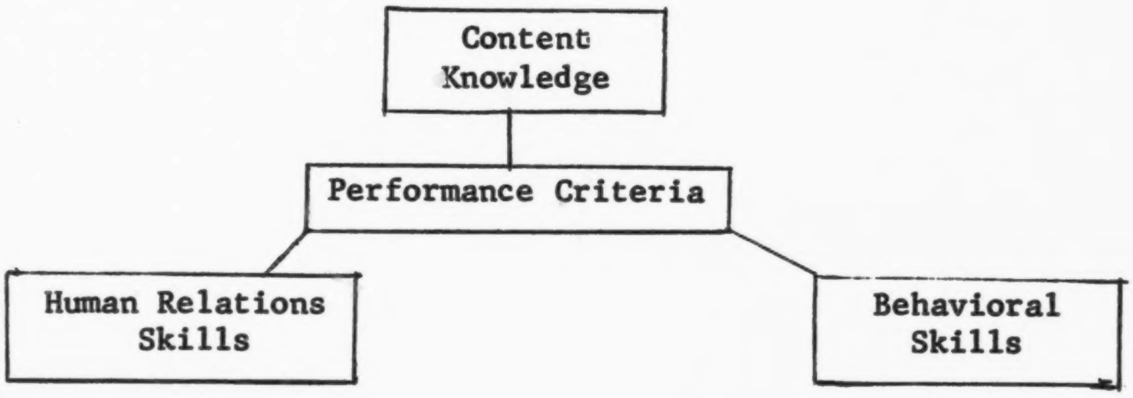
Objective: To require students to think beyond their first answer to a question.

Criterion: The teacher will micro-teach three five-minute sessions in which he probes students by (1) asking pupils for more information and/or more meaning; (2) requiring the pupil to justify rationally his response; (3) refocusing the pupil's or class's attention on a related issue; (4) prompting the pupil or giving him hints; (5) bringing other students into the discussion by getting them to respond to the first student's answer.

Evaluation: Supervisor will observe the lesson and categorize the probing questions in the five categories. Supervisor will judge teacher performance on whether or not the teacher responds in the five ways and on whether or not the teacher can concentrate on one student's question and answer.

Instructional Alternatives: (1) Teacher will observe a film of a model teacher asking probing questions; (2) Teacher will practice asking probing questions with just one student; (3) Teacher will practice asking probing questions with a group of ten students.

Performance criteria have been developed in three broad conceptual areas related to teaching. (1) content knowledge, (2) behavioral skills, and (3) human relations skills.



1. Content Knowledge

The restatement of content requirements from course requirement for a specified period of time to performance criteria which emphasize ability to perform was the major thrust in the planning stages of METEP. It is believed that recognition should be given to the fact that content knowledge is derived from many sources, formal coursework being only one.

Content knowledge is defined to include the depth and breadth of content most often seen as deriving from undergraduate liberal arts courses as well as the kind of content knowledge most often associated with that acquired within a School of Education. The latter is seen as a logical extension of the former, inseparable, but focused on questions of relevance and conceptual organization for pupils at the elementary level.

Many of the proposals on performance criteria suggest new and intriguing blends of content areas. For example, the importance of human relations understandings in social studies is one such potential new blend which results from a performance criteria approach. Another example is the possible relationships between aesthetics and science or language arts. It is expected that a blending of more than one content area in subject matter fields will occur more and more as the performance criteria approach develops.

2. Behavioral Skills

One of the basic goals of the teacher education program is the development of technical skills of teaching. The basic premise of the technical skills approach is that much of teaching consists of specific behavioral acts. If skills and behaviors which teachers perform often in the classroom can be identified, different training protocols or established procedures and techniques can be developed in order to produce proficiency in their use. In other words, much of the complex act of teaching can be broken down into simpler, more easily trainable skills and techniques.

A training technique for developing specific teaching skills is the process known as microteaching. It exposes the trainees to variables in classroom teaching while reducing the complexity of the situation. The teacher attempting to develop a new teaching skill is not confronted with preparing a lesson plan of forty-five minutes in length, nor does he have to worry about the management of a group of thirty students. Teaching a small class, usually four students, for a short period of time, five to twenty minutes, allows the teacher trainee to focus his attention on mastering a specific technique.

One of the main components of the proposed teacher education program will be the implementation of microteaching in order to train prospective teachers in the technical skills which have been identified.

The technical skills approach is not one of just mechanical competence in certain teaching skills. Along with his gaining proficiency in the skills, the teacher trainee should be encouraged to become a professional decision-maker. The trainee should decide when to use which skills to meet the aims of instruction and the needs of the pupils. The teacher is the instructional manager of the classroom and, as such, must make decisions as to the appropriate method of achieving the instructional goal, when the particular method should be used, and what activities should precede and follow it. Such decisions face the professional teacher every day and an effective training program must help the prospective teacher become an effective decision-maker. With performance skills clearly mastered the teacher can be a real decision-maker. He can focus in an effective way on such problems as the individualization of instruction and the development of students' talents and interests. He has more alternatives available to reach individuals, to motivate students, and to improve the effectiveness of his instruction.

3. Human Relations Skills

Human relations is not a mysterious activity. Rather it is a codifiable set of behaviors which describe what goes on inside a person or between people.

> HUMAN RELATIONS IS DEFINED AS BEHAVIORS EXHIBITED IN RELATION TO SELF AND OTHER INDIVIDUALS, AND IN RELATION TO GROUPS.

Thus, an individual thinking about himself or simply sitting by himself is engaging in human relations behavior. Two individuals meeting in an interpersonal interaction are engaging in human relations behaviors. School classrooms or group dynamics sessions are situations in which an awesome number of human interactions are going on. In short, any human behavior or behaviors engaged in intrapersonal or interpersonal activities represent human relations behaviors.

Human relations has been defined in the past almost always from a value framework. Somehow, human relations is seen as a "good" thing. Thus, traditional definitions of human relations tend to center on what should be rather than what _is_. By doing so, human relations experts have tended to confuse the present with future goals. The aim in this proposal is not to avoid the value issue of what human behavior should be, but simply to report what is actually present so that better specification of future goals may be possible.

The Model Elementary Teacher Education Program does have many specific value commitments as to the type of human behaviors considered desirable for elementary teachers. Some of these are well known constructs such as warmth, critical thinking, openness, and consciousness of cultural differences. These concepts, however, have been defined within behavioral terms and specified so that it is possible to teach these behaviors directly instead of by admonition, example, or, as is done more commonly, by chance. Some new constructs such as attending behavior, decision process, and the physical system are introduced by adding more precise definition of human relations behaviors. Wherever possible human relations behaviors have been organized in a hierarchical structure so that the teacher trainee increasingly learns how to integrate old behaviors into new patterns.

The METEP is interested in producing the fully human teacher, a person who meets the human criteria of warmth or human understanding, is capable of rigorous thinking, is in control of his own behavior, and is in a constant pattern of growth. These are high objectives for teacher training, but it is believed that education, psychology, philosophy, and behavioral technology are at a stage whereby the effectively trained teacher can now be a human relations expert in addition to having content knowledge and presentation skills.

B. _A Hierarchy of Teaching Competencies Developed Through Performance Criteria_

The three areas developed for performance criteria imply a hierarchy of three areas of competency necessary for superior teaching:

1. Mastery of content knowledge produces _subject matter competency_.
2. Mastery of content knowledge plus behavioral skills produces _presentation competency_.
3. Mastery of content knowledge plus behavioral skills plus human relations skills produces _professional decision-making_ competencies.

	Competency	Necessary Skills
1.	Subject Matter	Content Knowledge
2.	Presentation Competency	Behavioral Skills Content Knowledge
3.	Professional Decision-making Competency	Human Relations Skills Behavioral Skills Content Knowledge

The goal of competency in the subject matter, presentation and professional decision-making areas served as the guiding basis for the construction of the Model Elementary Teacher Education Program. Obviously these competencies are interdependent and cumulative, as are the skills and knowledge necessary to produce them. By first defining the desired performance criteria in the content, behavioral, and human relations areas, modes of instruction were designed to meet these criteria.

1. Subject Matter Competencies

One of the major goals of teaching requires that a body of knowledge be transmitted. In order to achieve this objective, content knowledge must be assimilated into the teacher's cognitive structure. The traditional method by which the teacher trainee acquires this knowledge has been through formal lecture courses outside the School of Education. It is proposed here that with effective development of performance criteria a variety of instructional modes may be utilized to meet the criteria. Content knowledge which is central to subject matter competency may be effectively acquired through closed circuit television broadcasts, programmed instruction including extensive use of CAI, independent study, seminars, as well as formal lectures.

2. Presentation Competencies

The possession of adequate content knowledge is a necessary but not sufficient condition for effective teaching. It is the task of the teacher to acquire the appropriate behavioral skills in order to translate the content knowledge into a teachable form. Learning theory has suggested various conditions under which the acquisition of knowledge takes place most effectively. The technical skills approach to teacher training which was elaborated earlier translates these principles of learning into principles of teaching. Examples of technical skills which have already been developed and are particularly relevant to the presentation of content include: set induction, closure, asking probing questions, planned repetition, and the use of examples.

3. Professional Decision-Making Competencies

It is our belief that one of the most crucial aspects of teaching is that of professional decision-making. The teacher is the decision-maker in the classroom. In order to meet his instructional objectives the teacher must utilize knowledge and skills from all three performance criteria areas - content, behavior, and human relations areas. He must decide what material is to be taught, how it should be taught and what techniques should be employed, and he must also consider the human variables which might affect the outcomes of his objectives. In other words, a myriad of factors must be considered by the teacher whenever he makes major decisions affecting instruction. The greater the teacher's content competency and the more presentation competencies he has, the more alternatives he has at his disposal in meeting his instructional objectives. But having content mastery and presentation mastery is not enough. The teacher must also be sensitive to the personological, psychological and sociological variables which affect instruction. By constructing performance criteria in the content, behavioral, and human relations areas, and formulating instructional systems by which these criteria can be met, the teacher trainee will have the prerequisite skills and knowledge necessary to make classroom decisions. A special aspect of human relations area with implications for decision-making are performance criteria relating to listening to others, defining the situation, and "decision process", a new approach to decision-making.

Besides possession of the skills and knowledge, practice in facing the situations which require these decisions is necessary. The kinds of activities which allow for this practice include: classroom simulation experiences which require teachers to face, to study, and to solve problems similar to those they will face in the classroom; micro-teaching experiences, observational experiences - both live and using videotapes; small group work; and student teaching.

A SYSTEMS CONCEPTUALIZATION
# of the
MODEL ELEMENTARY TEACHER EDUCATION PROGRAM
(including Evaluation of METEP)

How can teacher education best be conceptualized? We have developed many models over the years, but inevitably have returned in practice to traditional forms of teacher education. As performance criteria were developed by the project staff, it became increasingly apparent that a totally new approach to the organization of teacher training was necessary.

Systems analysis has proven to be the most useful method of organizing performance criteria. To develop a teacher (or to use the words of system analysis, "product") of maximum effectiveness both to himself and society, we must consider the many inputs and outputs of the person, of the teacher education program, and of the schools in which the teacher is eventually placed. Further, we must consider the way in which these three major components interrelate among themselves. Systems analysis provides the most comprehensive method of organizing objectives presently available.

The ensuing discussion considers teacher training in detail from a systems point of view. The ideas expressed here are seen as an exciting and newly challenging view of education in our society. While the language of systems is, of necessity, precise and formal, the life such an approach can breath in teacher education is open, expanding, and stimulating.

An attempt has been made to treat the Model Elementary Teacher Education Project as a man-made abstract system. This contrasts with a physical system which deals with hardware, equipment, and machinery. A system can be defined as a set of objects with a given set of relationships between objects and their attributes. Objects are parts or components of a system often referred to as subsystems. Attributes are the properties or external manifestations of the objects. Relationships are the bonds that link or tie objects and attributes together.[1]

In systems analysis the investigator's goal is to develop a model of the system under investigation. This model may be mathematical if quantitative relationships exist between objects. Flow charts are often used when the problem is both quantitative and qualitative in nature.

A total system consists of all the objects, attributes and relationships necessary to accomplish an objective given the number of constraints or limitations placed on its operation. A system can often be easily described by dividing it into logical components, objects or sub-systems. This approach allows the investigator the flexibility of limiting his analysis to one component at a time if the relationship between these subsystems are carefully defined. All subsystems should have identifiable inputs and outputs.

Every system exists within an environment. An environment is defined as the set of all objects that may conceivably have bearing on the operation of the system. (Text continued on page 30.)

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[1] The basic ideas of a General System Conceptualization are incorporated in the following presentation of the nuances of relationships

between the major components of a total, adaptive, normative systems model. Heavy emphasis is placed on a) the coupling of the defined subsystems b) the organization problem-solving process, and c) the adaptive characteristics of the integrated process.

A few words of caution are necessary here. The first model presented, Figure 2, is an unconstrained, "rough-cut" at a general, descriptive, and highly abstract level.

1. Subsystem couplings are located: the technical detail as to how is intentionally excluded from this initial analysis.
2. The types of organization problems used are merely illustrative and are by no means exhaustive or ranked in order of importance or relevance.

Interpretation of the schematic model, Figure 2, might best be accomplished by a brief discussion of its major segments, under the following rubrics:

1) Organization Information and Control
2) Decision Making (Problem Solving)
3) Authorization, Implementation and Audit.

Decomposing the system in this manner is clearly an arbitrary step that serves to make explanation more convenient. One must perceive the model as an abstraction of an aggregate, simultaneous process.

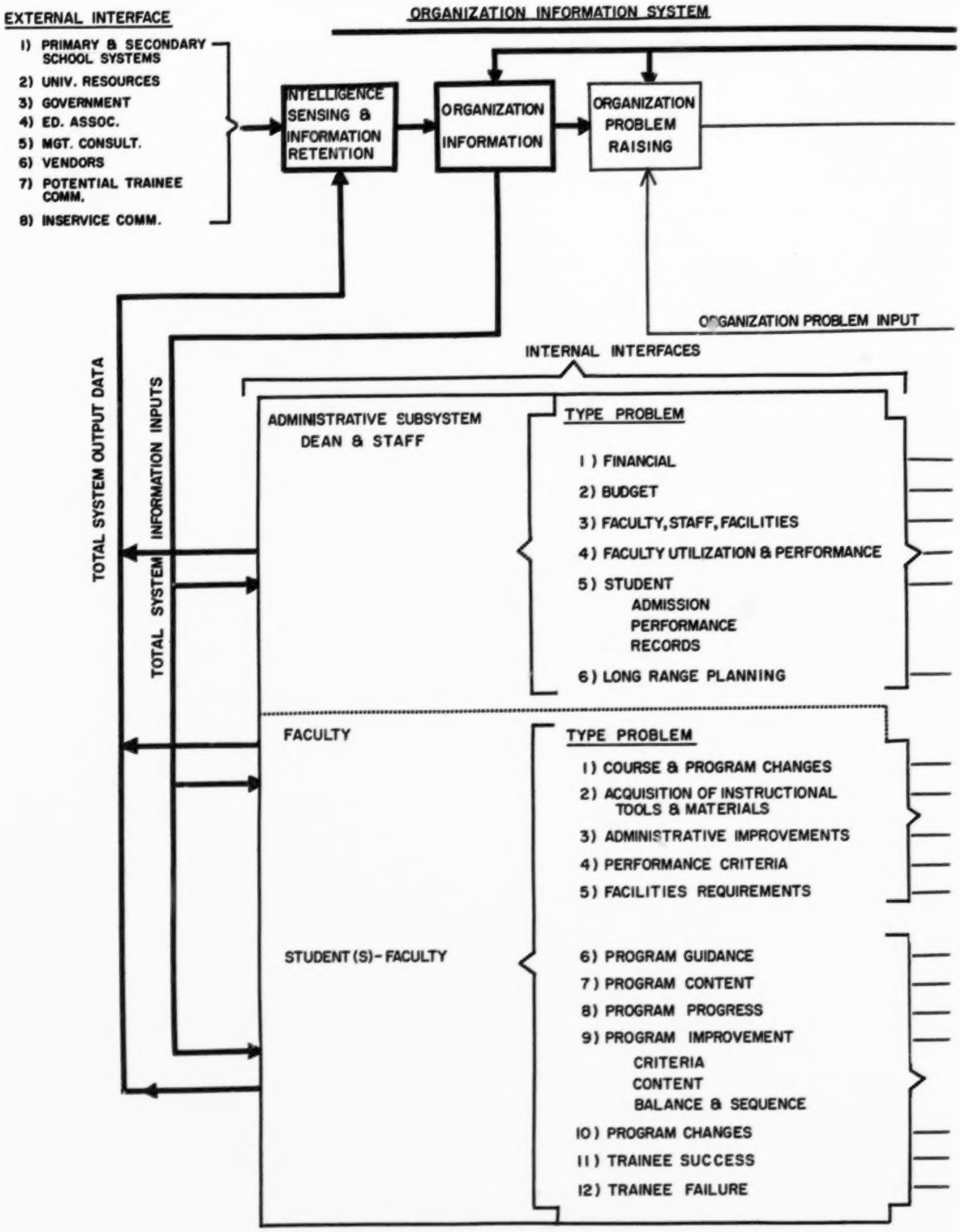
Organization Information and Control

Information Inputs

Predetermined, primary information inputs are retrieved from the selected environs of the system:

External: Information is sorted and classified, by specific components of the environment, into actual problems of performance by the system, or, observation series from which to make useful predictions of expected occurrences and opportunities. Admissions and Inservice components could be distinguished, organizationally, from the routine environmental scanning process and become a separate information and decision function.

Internal: In gross terms, all information inputs fed into the in-


EXTERNAL INTERFACE
1) PRIMARY & SECONDARY SCHOOL SYSTEMS
2) UNIV. RESOURCES
3) GOVERNMENT
4) ED. ASSOC.
5) MGT. CONSULT.
6) VENDORS
7) POTENTIAL TRAINEE COMM.
8) INSERVICE COMM.
ORGANIZATION INFORMATION SYSTEM
INTELLIGENCE SENSING & INFORMATION RETENTION
ORGANIZATION INFORMATION
ORGANIZATION PROBLEM RAISING
ORGANIZATION PROBLEM INPUT
INTERNAL INTERFACES
TOTAL SYSTEM OUTPUT DATA
TOTAL SYSTEM INFORMATION INPUTS
ADMINISTRATIVE SUBSYSTEM DEAN & STAFF
TYPE PROBLEM
1) FINANCIAL
2) BUDGET
3) FACULTY, STAFF, FACILITIES
4) FACULTY UTILIZATION & PERFORMANCE
5) STUDENT
ADMISSION
PERFORMANCE
RECORDS
6) LONG RANGE PLANNING
FACULTY
TYPE PROBLEM
1) COURSE & PROGRAM CHANGES
2) ACQUISITION OF INSTRUCTIONAL TOOLS & MATERIALS
3) ADMINISTRATIVE IMPROVEMENTS
4) PERFORMANCE CRITERIA
5) FACILITIES REQUIREMENTS
STUDENT (S) - FACULTY
6) PROGRAM GUIDANCE
7) PROGRAM CONTENT
8) PROGRAM PROGRESS
9) PROGRAM IMPROVEMENT
CRITERIA
CONTENT
BALANCE & SEQUENCE
10) PROGRAM CHANGES
11) TRAINEE SUCCESS
12) TRAINEE FAILURE

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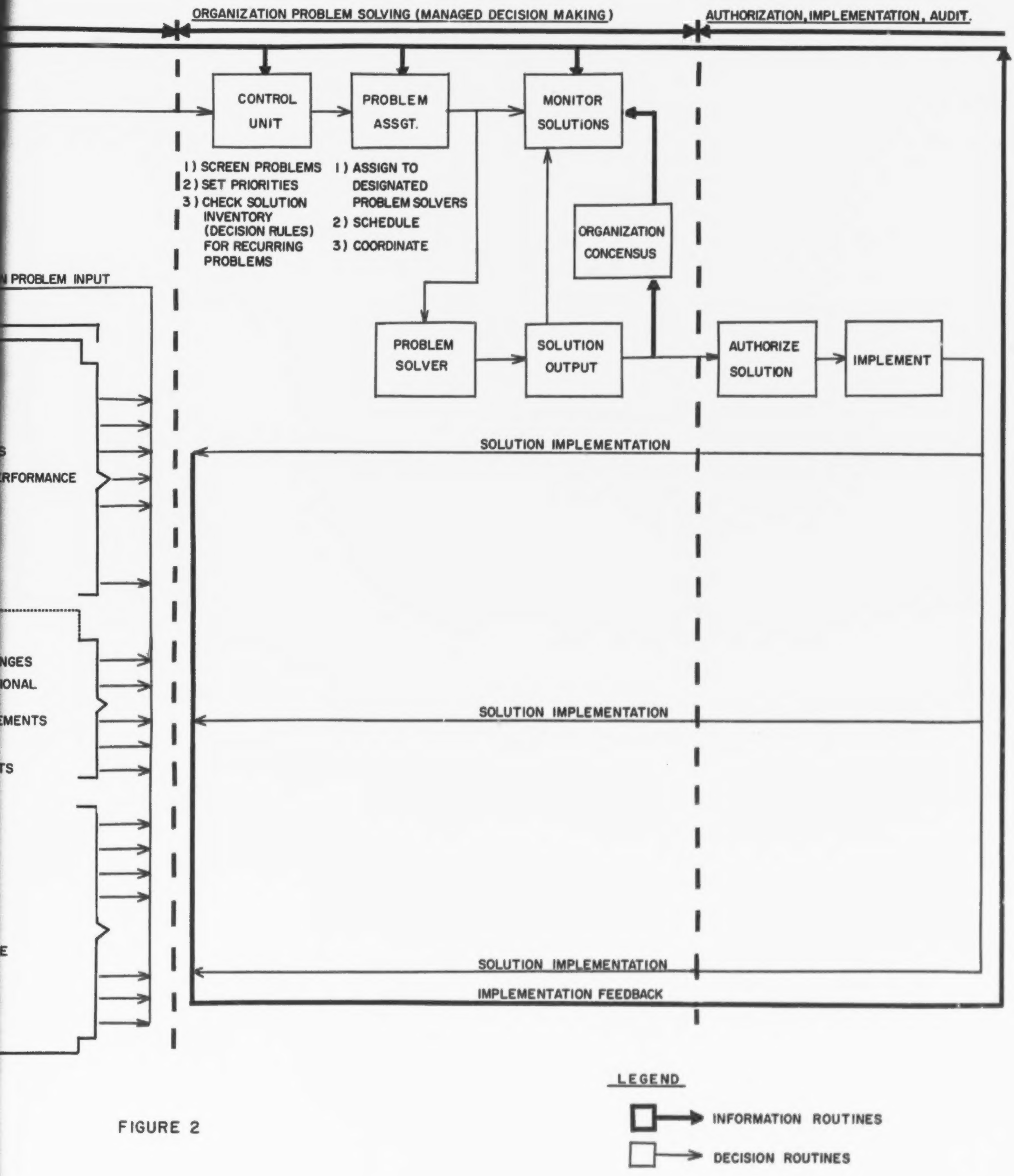
ORGANIZATION PROBLEM SOLVING (MANAGED DECISION MAKING)
AUTHORIZATION, IMPLEMENTATION, AUDIT.
CONTROL UNIT
PROBLEM ASSGT.
MONITOR SOLUTIONS
1) SCREEN PROBLEMS
2) SET PRIORITIES
3) CHECK SOLUTION INVENTORY (DECISION RULES) FOR RECURRING PROBLEMS
1) ASSIGN TO DESIGNATED PROBLEM SOLVERS
2) SCHEDULE
3) COORDINATE
ORGANIZATION CONCENSUS
N PROBLEM INPUT
PROBLEM SOLVER
SOLUTION OUTPUT
AUTHORIZE SOLUTION
IMPLEMENT
S
RFORMANCE
SOLUTION IMPLEMENTATION
NGES
IONAL
EMENTS
TS
SOLUTION IMPLEMENTATION
E
SOLUTION IMPLEMENTATION
IMPLEMENTATION FEEDBACK
LEGEND
INFORMATION ROUTINES
DECISION ROUTINES

FIGURE 2

telligence component represents detailed subsystem output measurements. Disaggregation of these information routines is, of course, dependent on the particular criteria of subsystem performance established.

These routines are information and not decision flows.

Data Loop (Information input to Subsystems)

A second purpose of the information system is to generate, from screened and stored information (external and internal), predetermined information inputs to all subsystems. Such information is but one among various input flows to the organization's administrative and teaching transformation activities, or subsystems.

Problem Raising Mechanism

External Environment: Some portion of retrieved data will pose direct problems for the system, for example, changes in University regulations. The remaining data would consist of general intelligence materials subject to analysis and interpretation in respect to seizing or creating opporunity for the school. In both cases, an organization mechanism screens and classifies the immediately relevant information, that is, an organization problem is raised.

Internal Interfaces: a) Analysis of sub-system performance variances, in respect to the total system, is carried out. Significant deviations from "programmed" performance criteria signals an organization problem. Among the various system problems are poor performance, errors, and lack of proper system closure in respect to planned experience (subsystems and total system). In short, a decision is made, on the evidence of subsystem output data, as to whether a subsystem had or had not performed optimally. If non-optimal performance has occurred or is occurring the next organizational attempt must be made--feed the problem (as an input) to the organization's problem-solving (decision making) subsystem.

b) Among subsystem outputs is direct organization problem raising. This is a formalized routine which provides access to the problem raising machinery regarding various ad hoc, or autonomous, problems associated with internal opportunity for change (suggested alterations to the current designed experience of the various subsystems) and innovation.

Control and Problem Assignment

Identified organization problems are analyzed in relation to priorities, then assigned and scheduled (time targets) as to expected solutions. Organizationally designated faculty and administration comprise the problem-solving group and are identified by the various levels and types of organization problems (no suggestions are made for such designnations for purposes of this report--many strategies are involved here).

In both problem-raising cases--monitored subsystem outputs and autonomous problem raising--any particular problem may by-pass search and solution stages if such a problem is a reoccurrence of a very similar or identified past problem that has been solved. A function of control, at this point, is to check previous problem and "solution inventory" for such an occurrence. In the event there is a "programmed" solution-- and an acceptable solution--it may pass directly to the implementation phase. Routine response for reocurring problems clearly avoids dissipating, or wasting the energy of the problem solvers and permits concentration of key efforts and resources on significant "new problems."

Decision Making (Problem Solving)

Problem Solving

Designated individuals receive documented instructions that indicate whether the problem at hand relates narrowly to an individual (component) in a subsystem involvement. Given a schedule of expected completion (along with access to all organization information terminals) solution search and development and alternatives begins.

Solution Output and Concensus

A recommended solution is directed to the control unit, and where joint problem solving has occurred any recommended solution must be subjected to a consensus of a) those who are affected by its implementation b) those who directly use or carry out the activities involved.

Any "optimal sub-program" must be considered in relation to its impact on the whole. In the case of students, this is one of the possible means of providing them with initial access to the organization. For example, the area of program changes, requirements and criterion may be addressed, on the part of the students, to the organization concensus mechanisms. In short, one can consider this an obvious mechanism (along with problem raising opportunities) for providing students with controlled, relevant participation in the organization's decision-making process.

Authorization, Implementation and Audit

Following consensus is the authorization step. Designating such individuals is again a strategy problem. The function performed here is to review, at the appropriate level of the organization the consistency of solution with policy, conduct of behavior, etc. Clearly some assumption of risk so that others may act for allocation of financial resources, facilities and faculty is necessary. The purpose is to approve a decision. After authorization the decision is fed back to the control unit to be placed in "inventory" and scheduled (time target & expected results) for implementation.

Implementation and Audit

Those directly involved in the decision-using activity are to direct and carry out implementation in accord with the system's requirements. A feedback loop on such implementation is provided as shown on the schematic. Continuing performance is programmed as a routine output measure in the control system.

It should be noted that these steps can be carried out in a creative way, appropriate for a School of Education, as well as in a more restrictive context such as might be found in business and industry.

This General Systems Conceptualization is a background for the explanation of the Model Elementary Teacher Education Program. Many specifics will now be considered in this framework.

The system under study must be defined by stating its boundaries within its environment. These boundaries place limits on the system to be studied. Once the boundaries of the system have been defined, the system can be subdivided into subsystems. These subsystems in turn may be described by more detailed subsystems. The fineness of the subdivision is a function of the depth of analysis of the system study.

The Model Elementary Teacher Education Program can be subdivided into several identifiable subsystems as illustrated in Figure 3. Each of these subsystems include a number of resources, and the resources within each subsystem differ depending on the function of a particular subsystem. People, instructional materials, supplies, information, equipment, and facilities are all examples of typical resources necessary to carry on the acitivities of a subsystem.

System inputs consist of prospective teacher trainees, related personnel data and the resources necessary to operate the system. At present, a filtering action occurs as prospective trainees request admission to the University since those candidates who do not meet admission criteria are eliminated. Careful examination of the appropriateness of this present filtering action will be necessary in order to insure that talented and capable persons are not prevented from entering into teaching because of an arbitrary and possibly irrelevant University admissions requirement.

Systems outputs include trained prospective teachers and various statistical progress and research reports. Restrictions are placed on the outputs of the system. These restrictions are incorporated within the control of a monitor subsystem. These restrictions consist of University requirements, requirements of prospective employers (a trainee qualified to teach ancient Greek is perhaps unemployable in elementary schools), state laws related to certification, and student educational preferences (students will select other vocation goals if the training program becomes too burdensome). In other words, the product produced by the system must meet customer specifications and it must be competitive with other similar products.[2]

The objectives of the Model Elementary Teacher Education Program have been stated earlier in this document. Systems design also requires a statement of specifications, objectives or postulates for each sub-

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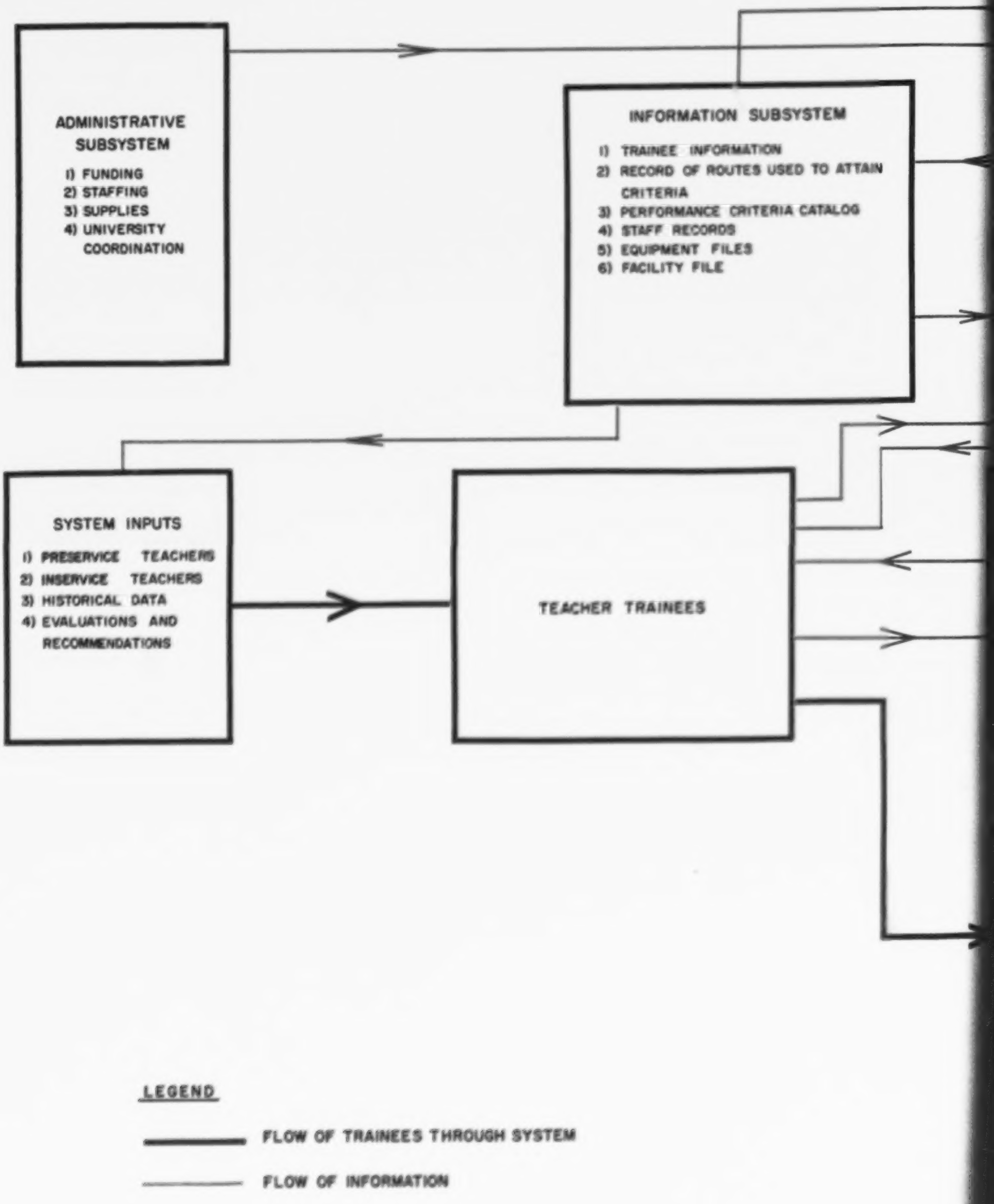
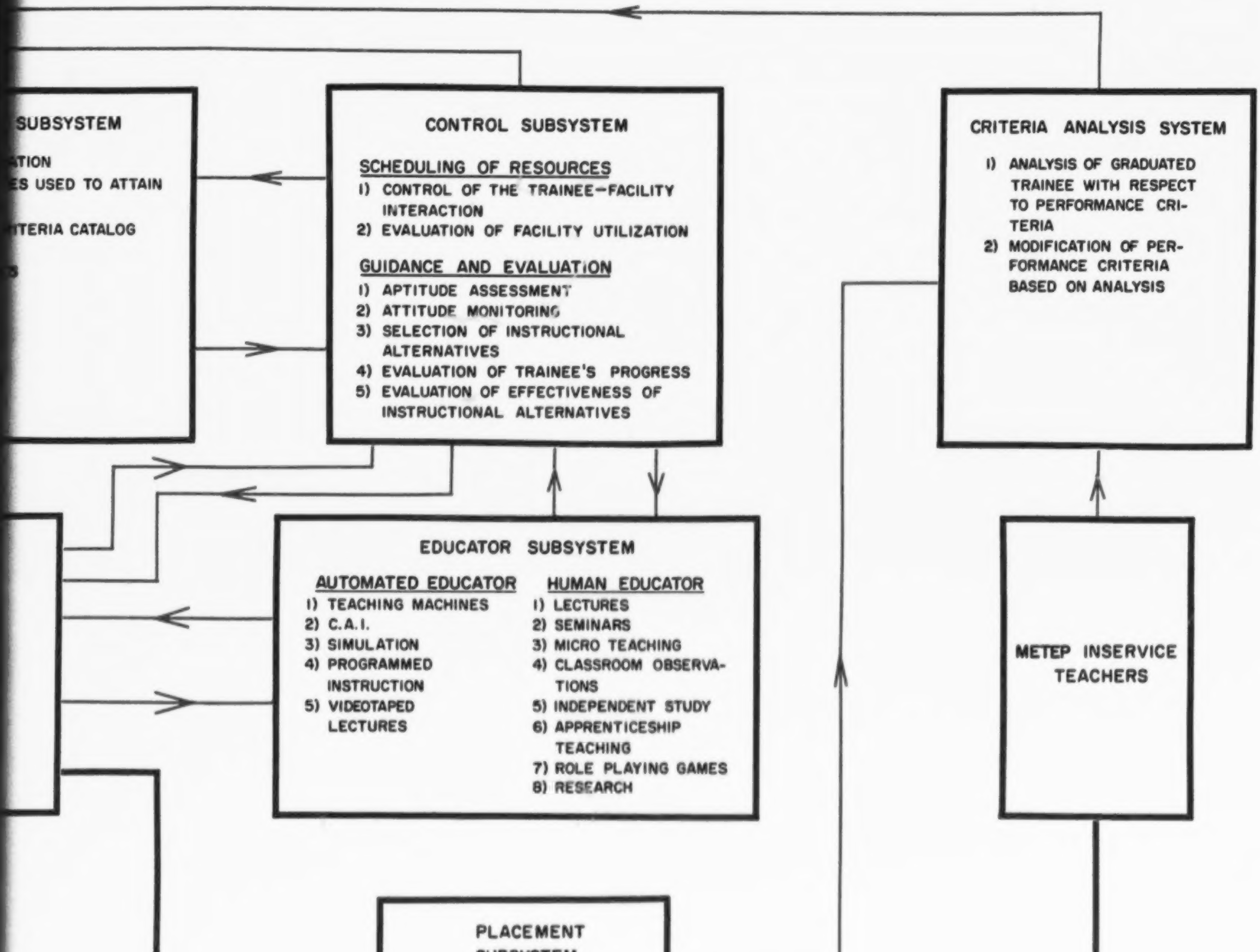
[2] This does not mean to imply that such a teacher-training program would focus primarily on preparing teachers to meet prevailing customer specifications; instead, a product would be developed which would raise customer expectations to the point where other teacher-training sources would be forced to re-evaluate their products in light of increasingly stringent customer expectations.

MODEL ELEMENTARY TEAC
SYSTEM CONCEP
FIGURE


ADMINISTRATIVE SUBSYSTEM
1) FUNDING
2) STAFFING
3) SUPPLIES
4) UNIVERSITY COORDINATION
INFORMATION SUBSYSTEM
1) TRAINEE INFORMATION
2) RECORD OF ROUTES USED TO ATTAIN CRITERIA
3) PERFORMANCE CRITERIA CATALOG
4) STAFF RECORDS
5) EQUIPMENT FILES
6) FACILITY FILE
SYSTEM INPUTS
1) PRESERVICE TEACHERS
2) INSERVICE TEACHERS
3) HISTORICAL DATA
4) EVALUATIONS AND RECOMMENDATIONS
TEACHER TRAINEES
LEGEND
FLOW OF TRAINEES THROUGH SYSTEM
FLOW OF INFORMATION

DEL ELEMENTARY TEACHER EDUCATION PROGRAM
SYSTEM CONCEPTUALIZATION
FIGURE - 3


SUBSYSTEM
TION
ES USED TO ATTAIN
ITERIA CATALOG
S
CONTROL SUBSYSTEM
SCHEDULING OF RESOURCES
1) CONTROL OF THE TRAINEE—FACILITY INTERACTION
2) EVALUATION OF FACILITY UTILIZATION
GUIDANCE AND EVALUATION
1) APTITUDE ASSESSMENT
2) ATTITUDE MONITORING
3) SELECTION OF INSTRUCTIONAL ALTERNATIVES
4) EVALUATION OF TRAINEE'S PROGRESS
5) EVALUATION OF EFFECTIVENESS OF INSTRUCTIONAL ALTERNATIVES
CRITERIA ANALYSIS SYSTEM
1) ANALYSIS OF GRADUATED TRAINEE WITH RESPECT TO PERFORMANCE CRITERIA
2) MODIFICATION OF PERFORMANCE CRITERIA BASED ON ANALYSIS
EDUCATOR SUBSYSTEM
AUTOMATED EDUCATOR
1) TEACHING MACHINES
2) C.A.I.
3) SIMULATION
4) PROGRAMMED INSTRUCTION
5) VIDEOTAPED LECTURES
HUMAN EDUCATOR
1) LECTURES
2) SEMINARS
3) MICRO TEACHING
4) CLASSROOM OBSERVATIONS
5) INDEPENDENT STUDY
6) APPRENTICESHIP TEACHING
7) ROLE PLAYING GAMES
8) RESEARCH
METEP INSERVICE TEACHERS
PLACEMENT SUBSYSTEM
1) DETERMINE QUALIFICATIONS OF TRAINEES
2) DETERMINE EMPLOYMENT OPPORTUNITIES
3) REFER TRAINEES TO EMPLOYERS

system within the system under study. An attempt is made to postulate the manner in which each subsystem would act if an optimal environment existed. An optimal environment is one in which all of the resources necessary for subsystem functioning are present and all interact with a minimum of friction. In an optimal environment, equipment is available when scheduled for use, staff members are appropriately placed in positions for which they are both competent and interested, and irrelevant environmental distractions are eliminated (e.g., inadequate facilities for student study or parking). The attempted implementation of the system using these postulates will introduce a number of constraints which may in turn cause modifications or changes in the postulates. Equipment or study space may not be available. Staff members will have professional obligations and interests in addition to their teaching duties. These changes in system postulates may be of a terminal nature which can be eliminated as the system undergoes further refinement. More equipment can be purchased, study space constructed and staff loads can be adjusted. Other changes in postulates may be of a permanent nature.

The subsystems which compose the Model Elementary Teacher Education Program are indicated below. The description of each subsystem includes a delineation of its postulates or specifications.

A. Control Subsystem: This subsystem performs several functions which are involved in maintaining the day-to-day operation of the Model Elementary Teacher Education Program. It is the process controller and is responsible for insuring that the system remains in a stable state and operates in an optimum manner. It carries on a continual analysis of collected data and uses this analysis for decision making. The subsystem provides immediate feedback for system control. It performs the following functions:

   1. Aptitude Assessment Function: This function deals with the gathering of aptitude data on individual trainees as they enter the teaching program. "Aptitude" is very broadly defined here and is intended to include personality factors, intellectual ability, socio-economic background, prior knowledge of subject matter and teaching, and all other relatively stable features which the teacher trainees bring with them upon entry into the program. A comprehensive diagnostic testing program is conducted. The data will be collected at the time when the trainees enter the program and will be initially stored as necessary information for conducting research. Thus, the compilation of this data on individual students plus information regarding each student's progress through the program will be used to determine which

sequences of instructional alternatives are most effective with which kinds of students.[3]

Specific data which is collected include: psychological factors, sociological factors and intellective factors. Attitudes, habits, insterests, motivation and behavior make up the psychological factors. Sociological factors are composed of two broad categories, demographic variables and ecological variables. Academic performance, vocational preference and avocational interests are the types of intellective data collected.

2. Guidance Function: With the assistance of an advisor referring to the aptitude assessment data previously collected, the educational goals are established by trainees. Appropriate performance criteria are selected by the trainee and his advisor. Strategies for meeting these performance criteria are determined. The attributes and characteristics of the incoming trainee play an important role in this process of matching trainee to the instructional alternatives for achieving each performance criterion. The trainee may be advised a number of times as he changes and re-evaluates his educational goals.

3. Scheduling Function: The trainee must select from and participate in a series of instructional alternatives as he progresses through the system. Staff members and facilities must be scheduled to meet the demand of trainees on a time-demand basis. This scheduling function will be done for groups or individual students for predetermined time intervals.

4. Attitude Monitoring Function: The monitoring of trainee's attitudes toward instructional alternatives, staff members and instructional methods will play an important part in the control of the Model Elementary Teacher Education Program. One use of this type of data will be to evaluate the effectiveness of routes to performance criteria.

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[3] As an example of the need for this aptitude assessment function, consider the probability that some teacher trainees will require a great amount of structure and detailed control in the form of short term feedback from supervisors throughout their training, while other teacher trainees will be quite capable of generating internal self-analysis and will prefer to learn primarily through independent study. Obviously, the two kinds of trainees described require different instructional alternatives in order to meet their particular stylistic needs and perhaps eventually to modify those patterns.

The specifications or postulates of the control subsystem include the following:

1. Every trainee can select the option of measuring his achievement against any performance criterion at any time, subject to the availability of staff and facilities to conduct measurements.

2. Trainees may choose the sequence in which they wish to meet performance criteria and may reorder this sequence at any time. This may be done within the constraints stated in item "1" plus the obvious implications of the "hierarchical skills" principle of learning, i.e., pre-requisites are necessary for the learning of certain kinds of knowledge and skills.

3. Trainees may select for each performance criterion, none, one, or all of the instructional alternatives offered. They may select out of any alternative at any time and reschedule another alternative subject to staff and equipment availability.

4. When a trainee has meet a designated sub-set of performance criteria related to his training goals he will terminate his training program.

5. Multiple program alternatives must be provided so that there are never fewer than two instructional alternatives leading to every performance criterion. From these alternate routes the trainee will select one.

6. Based on aptitude and achievement data, the subsystem will make a value judgment and suggest to the trainee what his most probable vocational goal(s) should be. The trainee would still have to decide whether or not he was interested in pursuing one or more of those vocational ones.

7. Once vocational goals are established, the subsystem based on relevant aptitude and achievement data will determine the optimal strategy for trainee to meet performance criteria related to above goals.

8. Subject to the constraints of staff, equipment, and faculty, the subsystem will schedule trainee for as many sections of specific non-conflicting learning activities as he may request.

9. Performance criteria will be added, deleted and modified based on the effectiveness of these criteria in producing teachers. Feedback from the Analysis Subsystem will provide measures of effectiveness.

10. At trainee's request Control Subsystem will reschedule the trainee's learning activities subject to equipment and staff availability. This request for rescheduling by trainees may occur at any time.

11. Subsystem will add, delete and modify instructional alternatives based on cost effectiveness of these alternatives in helping trainees to meet related performance criteria.

B. Administrative Subsystem: The functions performed by this subsystem include the supplying of materials, professional staff, and non-teaching personnel necessary to operate the program; management and allocation of funds for operating the program; and coordinating the program with the rest of the University, and with other agencies outside the University, e.g., certification agency and school districts.

C. Information Subsystem: The Model Elementary Teacher Education Program will require a large amount of data collection and data manipulation for system control and monitoring. Highly structured and organized methods of data storage must be used in program implementation. Information must be readily available for decision-making. For example, trainees must be able to reschedule an instructional alternative within a short period of time. This implies the status of the resources necessary for the newly selected alternative must be determined with ease. Files must be maintained indicating the current status of all resources including staff, facilities, and equipment.

Data which will be contained within this subsystem will involve: (a) aptitude and achievement data stored in the control subsystem; (b) sequence of learning experiences selected by each trainee to meet each performance criterion and some measure of the effectiveness of this sequence in relation to trainee's goals; (c) the cost in terms of resources, and the student and faculty time required to help each student meet each performance criterion through each instructional route; (d) system status of each trainee, i.e., what performance criteria he has met and what educational alternatives he is now engaged in for meeting which performance criteria; and (e) utilization and availability of all training resources including staff, equipment, and facilities.

Six files are proposed within the Information Subsystem. The content of each file is specified in as much detail as possible. Further and more precise specifications will be required when the system is implemented. The proposed file organization stresses interrelationships between file structures, the centralization of all system information and organization which will facilitate statistical data manipulation. The files proposed are:

1. Trainee File: The concepts of this file will include identification, biographical and status information on each trainee who enters the system.

2. Catalog File: This file will contain the instructional alternatives for all performance criteria. A subfile of this file will contain descriptions of all performance criteria and instructional alternatives, and descriptions of all educational objectives in terms of performance criteria and instructional alternatives. The purpose of this file will be to define precisely what performance criteria are related to specific educational objectives and what instructional alternatives are available to meet each particular performance criterion.

3. Staff File: This file will contain information on all the staff members involved in the system. Its function will be to maintain records of all staff. In terms of location, capabilities, and availability for pusposes of efficient scheduling of trainees.

4. Equipment File: This resource file will contain all available information on all equipment involved in the system. Its function will be to maintain records of equipment in terms of location, and availability for purposes of efficient scheduling of equipment.

5. Historical File: This file will contain a record of instructional alternatives used by each trainee to achieve each specific performance criterion. It will also describe the sequence in which performance criteria were attempted by each trainee.

6. Facility File: This resource file will contain all available information on classroom, seminar rooms, TV studios and other space facilities required in the program.

It should be noted that the above files are all interrelated. The student file will receive information from the catalog, equipment, and staff files. As each performance criterion is met the historical file will be updated with information from the student files. The content of each file is indicated in Appendix II.

D. Placement Subsystem: This is not completely within the bounds of the system, but it does play a very important function. Unless the product produced has a market, the system will become inoperable. Therefore, one of the important tasks of the placement subsystems will be to disseminate information about the teacher training-program and the products of that program to prospective employers. In addition, this subsystem will determine qualifications and vocational interests of trainees, determine employment opportunities and match trainees to positions.

E. Educator Subsystem: The Educator Subsystem can be segmented into two not completely distinguishable components; human and automated. Both components are responsible for a direct educational interaction with trainees. This subsystem is responsible for generaltion of all instructional methods used by the teacher trainees. These methods range from formal lectures to microteaching clinics. The subsystem must respond to demand changes by trainees in instructional alternatives. For example, if a trainee indicates a desire to terminate a seminar and initiate a simulation exercise, staff and equipment must be rescheduled quickly to meet this new demand. This rescheduling will be done within the constraints of the availability of resources.

F. Analysis Subsystem: Feedback regarding the quality, success, competency, acceptability and competitiveness of system output is provided by this subsystem. This feedback is used to add, delete and modify performance criteria. The analysis of trainee performance, and indirectly the effectiveness of performance criteria, is measured using rating procedures, video tapes, archival data and market value of trainees. Comparative analysis are made of three groups - program graduates, graduates of other teacher education programs, and the population of experienced teachers. See METEP Program Evaluation, page 127 for a complete explanation of this subsystem.

The above subsystems with their related attributes and the relationships as implied by the use of connecting lines in Figure 3 give an overall picture of the system under investigation in the Model Elementary Teacher Education Program.

As implied in the above discussion of the subsystems which compose the proposed Model Elementary Teacher Education Program, the learning activities of the trainee must be continually monitored. A high degree of control must exist. The control of the system can be no better than the accuracy of the data collected. If data lack reliability, consistency, or validity the system could with ease become unstable with resulting system failure. The data files which should be maintained are defined in detail in the appendix. All of these files must be highly structured and their content carefully specified.

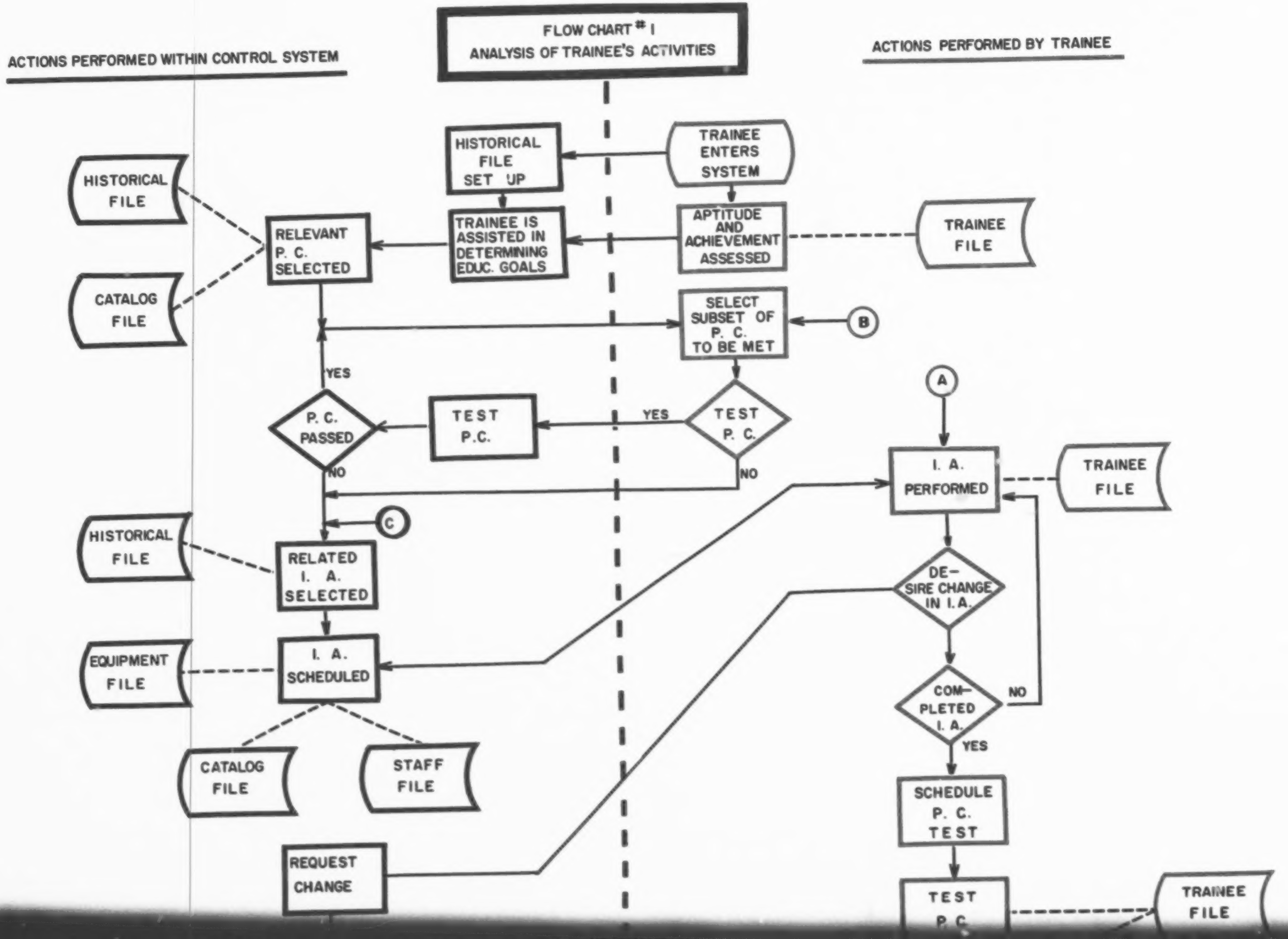
The interactions of the trainee with these information files and Monitor Control Subsystem are shown in Flowcharts 1 and 2. Flowchart 1 shows actions and decisions the trainee and Control Subsystem must make as the trainee progresses through the system. Flowchart 2 shows the actions which must be taken to change an instructional alternative. It schematically shows the interaction of the trainee, Control Subsystem and data base represented by the files which must be accessible for each transaction. A trainee may change from one instructional alternative to another at any time within the constraints of staff and equipment availability. The Control Subsystem would simply be informed of the desired change and reschedule the trainee's activities. A notation of this status change would be recorded in the Information Subsystem. Approximately the same procedure would be involved to add an instructional alternative.

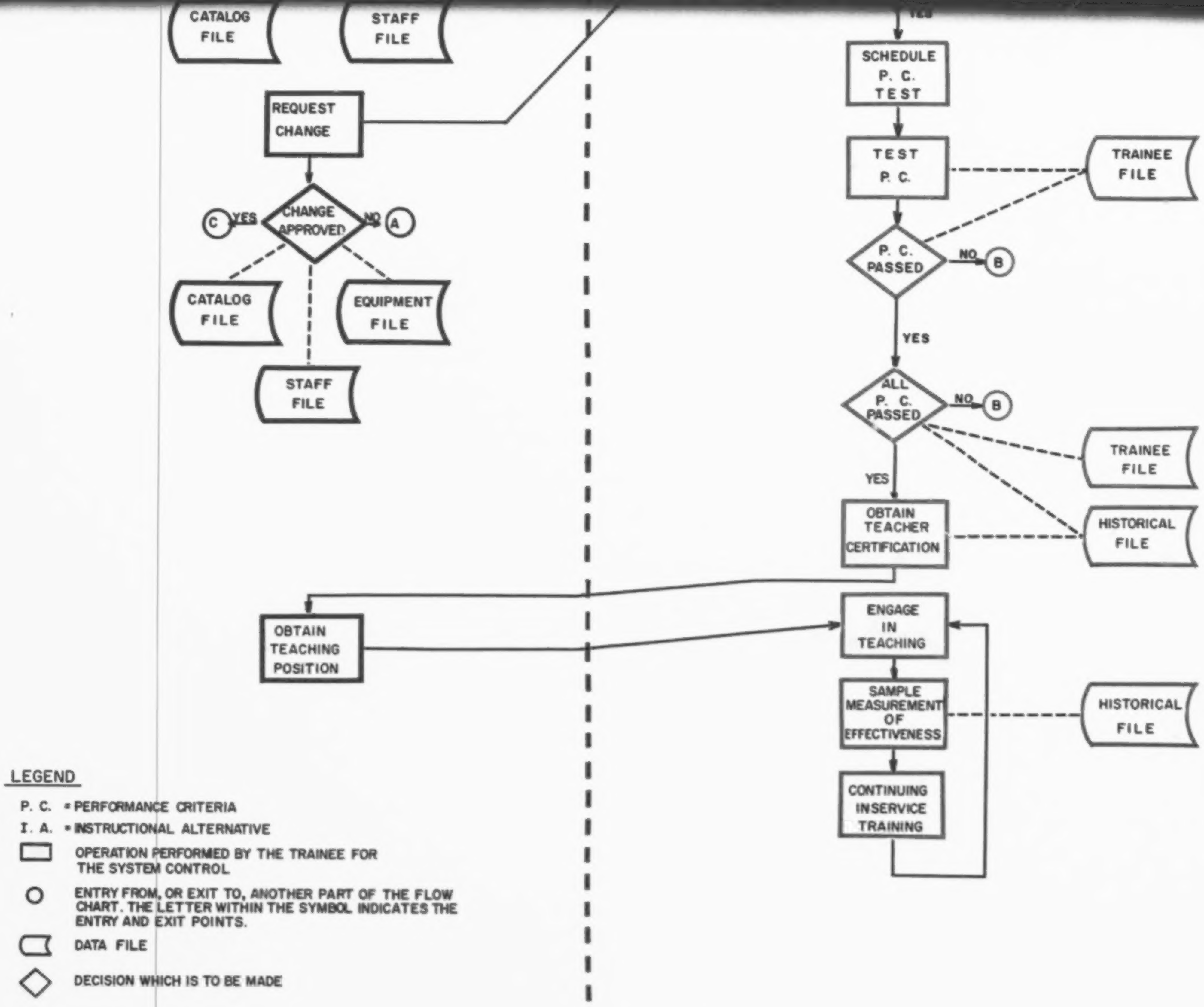
The complexity of these flowcharts emphasizes the importance of using a systematic approach in system design. This approach is particularly important in the design of performance criteria. Each performance criterion will be defined in an explicit manner which specifies a measurable performance. Associated with each performance criterion will be several attributes. These attributes should include: (a) quantitative methods of measuring the trainees achievement against the stated criteria, (b) a list of at least two instructional alternatives which could be used by trainee to develop characteristics necessary to meet a performance criterion; (c) an incremental time factor for every instructional alternative; and the expected total number of hours per week required, including study hours. All instructional alternatives should be assigned unique identifications to facilitate processing. The exception to this would be where the same instructional alternative could be used for several performance criteria.

This strategy for developing performance criteria implies a comprehensive enumeration of all instructional alternatives. This procedure of carefully defining performance criteria, and instructional alternatives will facilitate the integration of the Information Subsystem and Control Subsystem.

Figure 4 schematically shows a typical instructional module consisting of instructional alternatives to meet one performance criterion. At any time during the current incremental time interval allotted to the selected instructional alternative the trainee may measure his achievement against relevant performance criteria. If he does not meet the performance criteria he selects another instructional alternative or continues with the one he is presently engaged in. Appropriate performance measures and trainee's current status are updated in the correct files.

FLOW CHART #1
ANALYSIS OF TRAINEE'S ACTIVITIES


ACTIONS PERFORMED WITHIN CONTROL SYSTEM
ACTIONS PERFORMED BY TRAINEE
TRAINEE ENTERS SYSTEM
HISTORICAL FILE SET UP
APTITUDE AND ACHIEVEMENT ASSESSED
TRAINEE FILE
TRAINEE IS ASSISTED IN DETERMINING EDUC. GOALS
RELEVANT P. C. SELECTED
HISTORICAL FILE
CATALOG FILE
SELECT SUBSET OF P. C. TO BE MET
B
TEST P. C.
YES
NO
TEST P.C.
P. C. PASSED
YES
NO
A
I. A. PERFORMED
TRAINEE FILE
C
RELATED I. A. SELECTED
HISTORICAL FILE
I. A. SCHEDULED
EQUIPMENT FILE
CATALOG FILE
STAFF FILE
DE-SIRE CHANGE IN I.A.
COM-PLETED I. A.
NO
YES
SCHEDULE P. C. TEST
REQUEST CHANGE
TEST P.C.
TRAINEE FILE


CATALOG FILE
STAFF FILE
REQUEST CHANGE
CHANGE APPROVED
YES
C
NO
A
CATALOG FILE
EQUIPMENT FILE
STAFF FILE
OBTAIN TEACHING POSITION
YES
SCHEDULE P. C. TEST
TEST P. C.
TRAINEE FILE
P. C. PASSED
NO
B
YES
ALL P. C. PASSED
NO
B
TRAINEE FILE
YES
OBTAIN TEACHER CERTIFICATION
HISTORICAL FILE
ENGAGE IN TEACHING
SAMPLE MEASUREMENT OF EFFECTIVENESS
HISTORICAL FILE
CONTINUING INSERVICE TRAINING

LEGEND

P. C. = PERFORMANCE CRITERIA

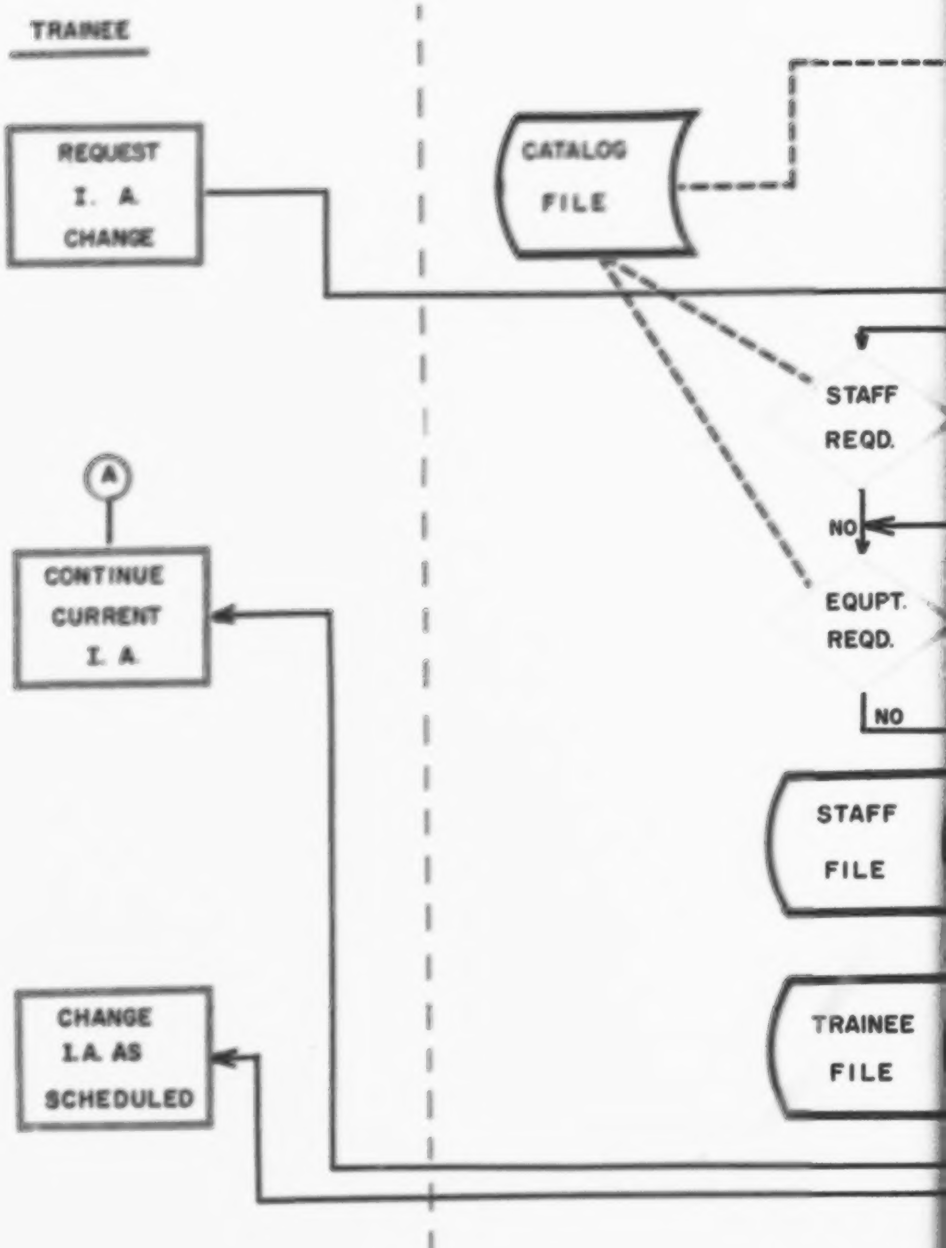
I. A. = INSTRUCTIONAL ALTERNATIVE

▭ OPERATION PERFORMED BY THE TRAINEE FOR THE SYSTEM CONTROL

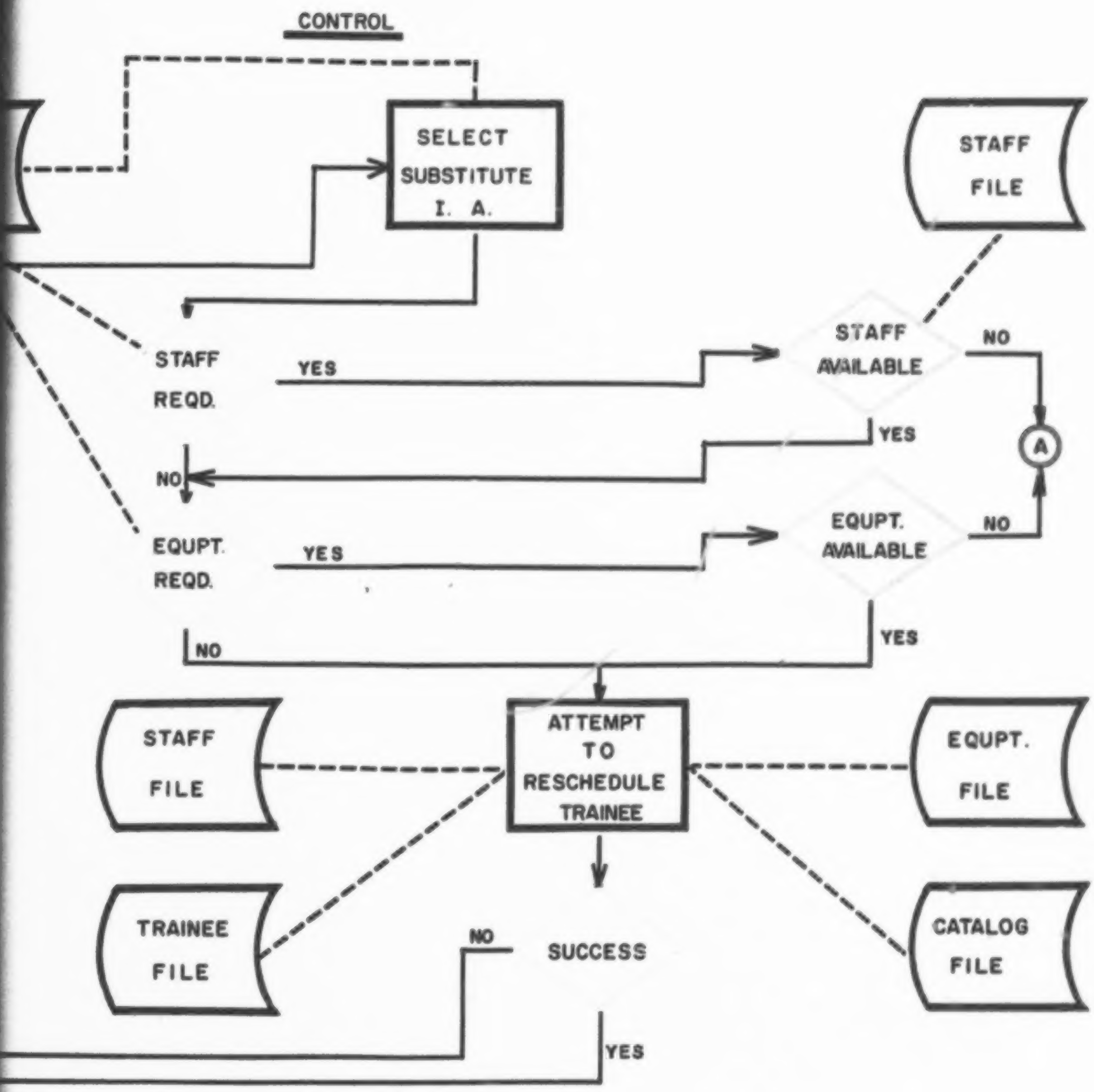
○ ENTRY FROM, OR EXIT TO, ANOTHER PART OF THE FLOW CHART. THE LETTER WITHIN THE SYMBOL INDICATES THE ENTRY AND EXIT POINTS.

◖ DATA FILE

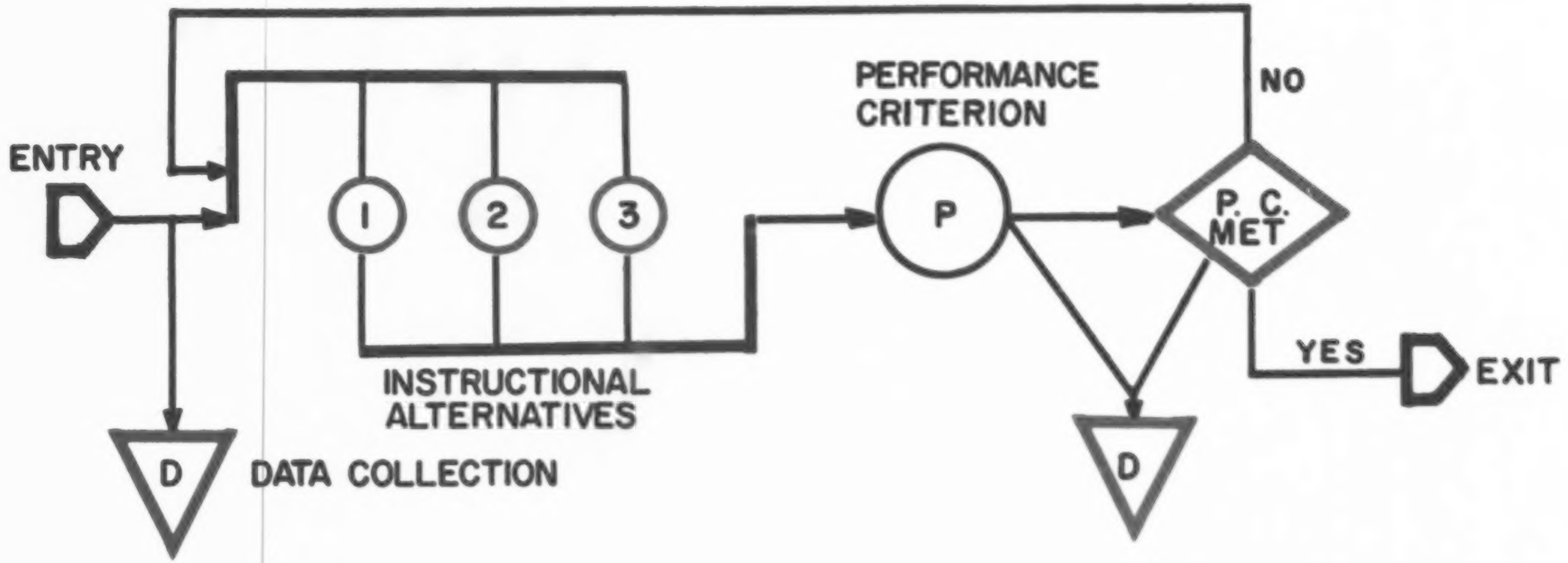
◇ DECISION WHICH IS TO BE MADE


TRAINEE
REQUEST I. A. CHANGE
CATALOG FILE
STAFF REQD.
NO
EQUPT. REQD.
NO
STAFF FILE
TRAINEE FILE
A
CONTINUE CURRENT I. A.
CHANGE I.A. AS SCHEDULED

FLOW CHART
PROCEDURES INVOLVED
OF INSTRUCTIONAL A


CONTROL
SELECT SUBSTITUTE I. A.
STAFF FILE
STAFF REQD.
YES
STAFF AVAILABLE
NO
YES
A
NO
EQUPT. REQD.
YES
EQUPT. AVAILABLE
NO
YES
NO
STAFF FILE
ATTEMPT TO RESCHEDULE TRAINEE
EQUPT. FILE
TRAINEE FILE
NO
SUCCESS
CATALOG FILE
YES

FLOW CHART #2
PROCEDURES INVOLVED IN THE CHANGE
OF INSTRUCTIONAL ALTERNATIVES


ENTRY
PERFORMANCE CRITERION
NO
1
2
3
P
P. C. MET
INSTRUCTIONAL ALTERNATIVES
YES
EXIT
D
DATA COLLECTION
D

SHOWING RELATIONSHIP BETWEEN PERFORMANCE CRITERION AND INSTRUCTIONAL ALTERNATIVES

FIGURE 4

MODEL ELEMENTARY TEACHER EDUCATION PROGRAM EVALUATION

The Model Elementary Teacher Education Program has been conceived of as a system whose salient characteristics are performance criteria, multiple exit and entrance points, instructional alternatives, technological innovations, and system modification and regeneration. Each of these characteristics depend heavily upon evaluative data for development, revision, production, validation, and acceptance. Since performance criteria for teacher education represent a pioneering venture, efforts must be made to validate the criteria and the image of teaching described by a set of such criteria. Multiple exit and entrance points require knowledge of trainee compentencies, aptitudes and attitudes rather than transcript records. Hence, efforts must be made to improve diagnostic, achievement and performance evaluations and to improve the recording processes and the utilization of student profiles. The existence of instructional alternatives create research needs in terms of identifying and comparing viable instructional sequences. There is always the need for cost-effectiveness study in a system comprised of so many varied components and in a system which maintains as a salient characteristic the goal of seeking to take advantage of technological potential and development. Since the system is designed for modification and regeneration, feedback on system operation, production, maintenance, and social relevance is essential.

As can be seen from the previous paragraph, the evaluation needs of the Model Elementary Teacher Education Program are extensive and varied. Basically, the evaluative procedures could be described under several dichotomies; internal-external, descriptive-comparative, criterion referenced vs. norm references, production oriented vs. market value oriented, quantity vs. quality, and system efficiency vs. system appropriateness. Since evaluation data fitting each pair of dichotomies must be generated for each salient characteristic, it would seem more practical to describe the evaluation of the program in terms of the setting within which the data were collected. Thus, the information gathered in the field will be used by the Analysis Subsystem, and the information gathered at the University will be used by the Control Subsystem.

THE CONTROL SUBSYSTEM

At any time the criteria file plus the collective educational goals of the teacher trainees define completely the immediate objectives of the system. How well the system achieves these objectives depends to a high degree on the following two considerations: a) the appropriateness of educational goals to teacher trainees' abilities and ambitions; b) availability of appropriate equipment and personnel; c) the interaction of equipment and personnel with the teacher trainees; d) the appropriateness of this interaction to the trainees educational goals. If one or more of these areas is poorly controlled, the performance of the system may be degraded with respect to the trainee's objectives. It is convenient to consider b and c above as part of the general scheduling function of the Control Subsystem. Topics a and d shall be considered as a part of the guidance function.

I. Scheduling. The who, what, when, and where of the system operation is decided by the scheduling portion of the Control Subsystem. The performance of this scheduling function may be degraded for two reasons. First, the technique of scheduling may not be appropriate. For example, the first-come-first-serve policy may work fine relative to a certain complex of equipment, students and personnel, but may be inappropriate relative to a different complex. Secondly, certain resources may be in short supply while others are abundant.

The exact nature of the scheduling function, of course, must be decided by the Administrative Subsystem and must be related to the operational goals of the overall system. For example, in some schools it may be appropriate to minimize the average length of time that trainees spend in the system subject to certain cost constraints. In other schools, it may be more appropriate to minimize costs subject to certain educational constraints.

The determination of resources in short supply should be a byproduct of the scheduling function. Scarce resources should be reported to the Administrative Subsystem whose job it will be to procure additional resources as is necessary. For example, suppose at some time the reading of a particular book is on numerous teacher trainees' instructional requisites for satisfying their educational goals. In this situation, it may be appropriate for the Control Subsystem to recommend to the administration that more copies of this particular book be ordered for the library. In addition to discovering scarce resources, the scheduling function should also discover when a particular resource is relatively unused. Such resources should be disposed of in some appropriate manner.

II. Student Evalua[illegible]nd Guidance. When a teacher trainee first enters the system, he br[illegible]th him certain historical data as well as letters of evaluation and recommendation from previous institutions. This information is supplied to the Information Subsystem where it in turn becomes available to the Control Subsystem for the purposes of evaluation and guidance of the trainees. Hence, the Control Subsystem helps students to determine goals in terms of a specific set of criteria and determine a sequence of instructional alternatives designed to help the student achieve proficiencies consistent with these determined goals. This sequence of instructional alternatives should be modifiable by trainees at any time during their program. Moreover, there should be at least two different instructional alternatives offered for each criterion selected by a trainee.

In addition to this guidance function, the Control Subsystem must provide means for demonstration of proficiency in the students' chosen areas. The student should be able to request a proficiency examination at any time.

The Model Elementary Teacher Education Program attempts to maximize the student's freedom. It is unlikely that any two students will spend exactly the same number of hours engaged in educational pursuits. On the contrary, each student will engage in just those educational pursuits which he believes relevant to his particular goals. Because of these freedoms, it will be necessary to make a special effort to keep track of the student as he progresses through the system. For this purpose, it is desirable that every trainee be scheduled for at least 15 minutes of guidance every two-week period. This is not to imply that the student shouldn't make use of the guidance facilities of the Control Subsystem at other times of his choosing, but only that a lower minimum is to be established for guidance. During these 15 minute guidance sessions, the student will relate his attitudes toward the instructional alternatives, staff members, and instructional methods that he is currently engaged in. This information will, in turn, be useful in evaluation of the effectiveness of the overall system relative to certain educational goals. In addition, these regular 15 minute guidance sessions will make it impossible for students to be ostensibly a part of the teacher education program, but in fact, not actively engaged in the pursuit of instructional alternatives which will qualify them in their particular chosen areas.

ANALYSIS SUBSYSTEM

The Analysis Subsystem is designed to operate as the control mechanism external to the program, gathering and feeding back information to the system concerning the quality and quantity of system output. This subsystem of the program is designed to: (1) identify social trends which place new demands in competency on teacher education curriculum, (2) approximate manpower shortages, (3) promote solutions to social needs such that the system is able to maintain social relevance, (4) estimate in terms of multiple measures the degree of success attained by program graduates, (5) compare products of the Model Elementary Teacher Education Program with experienced teachers and with products of other teacher education programs, (6) identify evidences of malpractice which occur systematically and have possibilities of being linked to either flaws in the system or to system input, and (7) ascertain acceptibility of system products in the field of practice.

One procedure through which data can be gathered on the quality of the products is through rating procedures that focus upon teaching and teachers. A sample of teachers could be selected from the program graduates, from the graduates of other teacher education programs, and from the population of experienced teachers. Each group would be stratified on intelligence factors, personality characteristics, teaching-position variables, and pupil types in order to obtain some degree of comparability. Ratings on teaching effectiveness would be gathered on all three groups and comparative analysis for group differences could be made. One rating that may be made is that of the principal or local school supervisor with regard to teaching performance in the classroom. A scale of 20 questions (or even a more specific diagnostic instrument like the Stanford Teacher Competence Appraisal Guide currently in development) could be asked of the supervisor or local school principal related to academic competency, relations with pupils, relations with parents, relations with colleagues, motivation, etc. A second form of rating would be that of the colleagues or peer group. For the third form of rating, videotaped samples of teaching taken on subjects of each group could be rated by "experts" on a randomized viewing basis. Samples of teaching performance of the three groups would be rated on a global basis by sociologists, psychologists, mental health workers, curriculum experts, etc. A fourth type of rating is a preference of instruction rating made by the students involved in the teaching situation. Rating scales used with elementary school children are notoriously reactive; however, they should be equally reactive across groups allowing for somewhat reliable comparisons. The fifth form of ratings could be gathered directly from the parents of the pupils in the teacher's classes or indirectly from records of parent contacts with teachers and counselors. At least two types of parents can be identified; those who have close ties to the school PTA types, who invest heavily in aiding the school system, and are likely to know at least something of what is going on in the classes. A second type of parent is those with little interest in the school and/or little contact with the school. This latter type of parent would be reacting to a questionnaire on the basis of heresay evidence. Perhaps, this would offer rich insights on the teacher. Finally, some rating scales could be made for self-ratings by the teachers involved. These would be concerned with attitudes toward education, toward the pupils, toward the institution, etc. It should be noted that the kinds of information which could be obtained from these ratings provide for the evaluation of the total product. That is, is the product turned out from this model of training competitive? It makes no claim to be evaluation against some arbitrarily established standards.

Evaluation data related to standards should be gathered from teaching outputs and from evidence of criteria transfer into classroom practice. The video tape records gathered for the global analysis by experts could be utilized to identify criteria utilization that can be seen in classroom practice. These tapes could be subjected to frequency counts and tape analysis to see if evidences of specific criteria appear in the teachers' on-the-job efforts. Cross comparisons of teacher-groups formulated by differences in criteria attainment could be used to demonstrate the validity of some criteria. The absence of criteria visibility, however, would not be evidence that the criteria were not useful in the development of the "whole" teacher. The interaction of criteria and their additive efforts would certainly confound analyses of this type, but some useful evaluation data could be generated here. The problem of efficiently sampling teaching behavior is so complex that specific validition of an individual criterion is almost impossible. Multiple regression analyses would be used to identify criteria providing major effects in explaining variances in ratings among the Model Elementary Teacher Education Program teachers.

The ultimate criterion, however, for the validity of the performance criteria must be stated in terms of what happens to the pupils of the program's graduates. Again, multiple regression analyses can be used to identify major criteria which explain variances in mean change of achievement tests over classes of specific teachers, variances in mean change of class attitudes, and variances in mean changes on psychological measures taken on the classes of specific teachers.

Since there are at least two instructional alternatives for every performance criterion, data will be collected which will allow an analysis of the interactions between trainees' aptitudes and the selected instructional treatments. Changes in the slopes of learning curves can then be used to produce information regarding optimal learning strategies for individuals across instructional alternatives. As data accumulates the effectiveness of such an analysis will increase the efficiency with which individualization of instruction can occur.

Overall evaluation of the products could be made using archival data. Hidden away in every school are lists and figures on all sorts of events which might be useful in comparing the three groups. For example, student achievement scores on standardized tests might be useful in comparing the gains of students among the three groups of teachers. Scores made on the National Teachers Examination could provide the basis for another comparison. Rates of absenteeism, length of service in education, participation in professional organizations, community participation, proposal writing and special projects development would be other measures that may provide useful information.

An overall analysis of market value of the systems' output should also take place. Is the system producing manpower types which can take an active role in diminishing educational needs in adequate quantity with adequate quality? Through placement services data would be gathered on the employment potential of the program's graduates. Follow-up studies would feed back information on the attrition of graduates after placement and on the advancement of graduates after placement. A survey instrument could be used to anticipate manpower needs and feed these into the Control Subsystem.

SUMMARY

The modus operandi of the Model Elementary Teacher Education Program is to model an educational process for elementary teacher trainees, not as a chronological structure, but as a configuration. Starting with end points, or certain trainee performance criteria, the model builder begins by asking what disciplines, what skills, what knowledges, and what perspectives are to be achieved by trainees? What sequence and balance, at each stage, between possession of knowledge and skills and the ability to learn and use is most desirable?

The result of this approach is not necessarily more difficult work for the trainee, but better focused work, measured in terms of its suitability for and contributions to the trainee rather than in terms of

2

courses taken and years spent. In short, what is sought is a series of definable skills that can be learned, along with ways to measure how effectively a trainee can perform those definable skills.

An inescapable requisite of the total systems approach is that teacher education collaborate with technology and cease to regard it as an alien force. Technological tools of analysis, teaching, and even management should be exploited as a means of closing any discernable gaps between a trainee's current position and the profession for which he is being educated. Whenever possible, the total educational system should rapidly substitute work by knowledge and concept for work by the hands. Administration, faculty, and trainee should each be afforded maximum concentration on truly human work. Indeed, we require an organization capable of rapidly exploiting technology in its fullest concepts.

The Model Elementary Teacher Education Program is based upon these contents:

1. An Integrated Total System, whose parts have been described in some detail.

2. Planned organizational decision-making as a vehicle to enable maximum creativity while keeping the total system clearly in mind. This is in contrast to the present typical random and usually poorly planned responses and behavior of organizationally sanctioned individuals in their traditional, hierarchically defined roles.

3. Measurement-evaluation-feedback, as a way of "keeping score" on the total system. This is a vital part of shifting design emphasis away from "structure" and "functionalism" to emphasis on total process and self-correcting flows of the constituent components. The organization proposed is itself a "learning system" and must be designed accordingly.

THE SCHOOL OF EDUCATION AND THE UNIVERSITY AS A WHOLE

THE SCHOOL OF EDUCATION AND THE UNIVERSITY AS A WHOLE

Universities in the United States are not based on performance criteria. Graduation depends on the satisfaction of unit and time criteria. At the University of Massachusetts, for example, undergraduates must satisfy 120 semester hours of academic credit, a task that requires a "normal" load of 15 course credits each semester in a variety of academic areas over a four-year period.

A School of Education based on performance criteria would be operating in a divergent fashion from the rest of the university and would be in basic conflict with the course-unit-time system of university regulations. This central dichotomy between the idea of a School of Education based on performance criteria and a general university program based on course and time criteria requires some attention.

The issue raised here, moreover, must be understood against the background of the characteristic relationship between Schools of Education and other areas of universities, particularly Colleges of Arts and Sciences, in the United States today. On most campuses a wary and cantankerous truce characterizes this relationship. Undergraduates preparing to be teachers are generally required to take a certain number of courses in the Colleges of Arts and Sciences and then given a certain dose of "professionalism" in the School of Education. The degree of cooperation and planned cross-fertilization is minimal. The general modus operandi is one of "live and let live."

As a general proposition, we believe that the success of any teacher-training program relevant for our times depends on better cooperation and interaction between a School ofEducation and other schools in the university. This is particularly true as schools of education move toward the preparation of educational personnel for differentiated staffs. The training of master teachers (in social studies or science) or an expert in computerized instruction depends on a sophistication in certain academic areas that the College of Arts and Sciences or School of Engineering can offer. One of the great tragedies of elementary and secondary education, in fact, has been the gulf between public school personnel and intellectual progress in various academic areas. This has remained largely true despite efforts of such groups as E.S.I., NDEA Institutes, or the reforms in science curriculums. To continue this gulf would be sterile and foolish.

How, then, might a model teacher-training program based on performance criteria interact effectively with the rest of a university? There are at least three general alternatives: (1) Base an entire university on performance criteria; (2) Assume that a resolution of the dichotomy between a School of Education based on performance criteria and general university programs based on course-time criteria is either hopeless or undesirable; or (3) Take steps to accommodate the divergence by opening up areas of cooperation, compromise, and greater flexibility. None of these routes is necessarily undesirable nor impossible. Further, the best route will probably depend on the peculiar circumstances present on different university campuses. Much of the appeal of a model teacher-training program based on performance criteria as outlined in this report is that it can be accommodated and implemented in different ways on different campuses.

The first alternative -- to base entire universities solely on performance criteria -- is probably unrealistic in the near future on most American campuses. It should be noted, however, that some colleges and universities -- such as the soon-to-open Hampshire College in the Connecticut Valley -- are considering such a step. Furthermore, many European universities have long based their programs on the passing of comprehensive examinations instead of specific time criteria. It should also be recognized that the present ferment on university campuses, particularly that initiated by students, is making more universities open to new approaches and more flexible in considering alternative ways of assessing student needs and performance.

The second alternative -- accepting the dichotomy implied between programs based on performance criteria and those based on time criteria - is not ipso facto unacceptable or unworkable. The concept of a general liberal arts program based on time and course criteria as a background for professional training is widely accepted. Further, the so-called "values" of a liberal arts background may not as easily succumb to performance criteria nor may the simple process of maturation (a time value!) in a university context be unworthy. If many of the values and objectives might profitably be subject to the possibility of performance criteria, however, a desirable flexibility might emerge or at least alternative routes to meeting them.

It is clear, however, that a School of Education based on performance criteria can effectively operate in the normal university environment. At the University of Massachusetts, for example, an undergraduate pursuing a career at the elementary school level normally takes all his work in the College of Arts and Sciences during his freshman and sophomore years, and one-half his work there during his last two years. Thirty academic credits, or one-half his load during the last two years, are normally taken in the School of Education. This bloc would ideally be allocated on the basis of performance criteria rather than course-time criteria. This route is both feasible and consistent with the objectives of the model teacher training proposal.

A more imaginative, hopeful, and fruitful goal, however, would lie in a third alternative: to open up lines with the university as a whole that would lead to greater flexibility and experimentation in the introduction of performance criteria to a greater range of experience of future educational personnel. The possibility of history or sociology professors helping devise performance criteria appropriate for future social studies teachers would be one kind of fruitful outcome. The possibility of a university offering alternative routes to a degree -- one based on performance criteria -- might become possible. The prospect that students majoring in education could satisfy certain criteria -- either by courses or other experiences -- could also be opened up. It is equally apparent that some alternatives would vary (and in many cases shorten) the "normal" time required for a degree or certification. The key objective would be to provide mechanisms and open a dialogue so that a School of Education based on performance criteria could work toward a more flexible university atmosphere and a greater degree of interaction between different groups so crucial to the preparation of educational personnel appropriate to the last third of the twentieth century.

At the University of Massachusetts several steps have already begun that promise a more fruitful interaction between the School of Education and other centers of academia. Most are simply suggestive of the possibility of new directions. First, the School of Education itself, already embarked on a year of major planning and reorganization, has attracted personnel with inter-disciplinary experiences. Included among recent additions to the faculty are a Jungian psychologist with strong training in music; a former Peace Corps training officer with training in law, political science, and Hebrew literature; two experts in the problem of the urban disadvantaged; an historian; and men trained in English Literature and sociology. Some have joint appointments in Colleges of Arts and Sciences. Secondly, members of the School of Education faculty are heading such university-wide projects as the Committee for Collegiate Education for Negro Students Project and its tutoring program; Project #10, an experimental residential college at the University, and the like. Thirdly, plans have been formulated to offer a special training program for Ph.D. candidates in the Arts and Sciences who intend to become college teachers; this program will be operated on a cooperative basis between the School of Education and the College of Arts and Sciences. Fourth, 75 special doctoral students have begun work in the School of Education, people with training in fields ranging from history, television programming, or ghetto service organizations, with an open charter to pursue work throughout the university. Fifthly, preliminary suggestions for organization of the School of Education view the school not as a separate "place" or "program" but a multiple cluster of diverse resources and personnel from all sectors of the university and the off-campus community appropriate in the training of new educational personnel. Sixthly, many committees who have worked in establishing performance criteria in particular areas of this teacher-training model have come from academic areas outside of the School of Education. Finally, nearby Hampshire College--an experimental effort in undergraduate education--has already begun dialogue with the School in experimenting with new methods of establishing criteria for students seeking B.A.'s. These disparate, but reinforcing, efforts are only suggestive of directions that may lead to a more effective context for a School of Education based on performance criteria within a general university community. Far more intensive and extended relationships will undoubtedly develop.

THE PRESERVICE - INSERVICE CONTINUUM

Teacher education of the present is a rather intensive one shot period of training which occurs almost exclusively prior to a person's entry into the teaching profession. Upon completion of the necessary content and professional courses, one compact period of practice, and all degree requirements, a person becomes a "teacher" - a teacher whose training is largely over, a teacher who is ready the following September to accept the full responsibilities of teaching in the same manner as her colleague in the next room who might be starting on her fourteenth year in the classroom. Existing inservice education programs seem to be based on the belief that the completion of preservice training and the bestowal of a teaching credential creates a lifetime of professional competence and that any inadequacies in a teacher's preservice training will leave a lifetime of irremediable professional handicaps.

What is needed today is a complete restructuring of inservice education so that it becomes directly relevant to the upgrading of a teacher's classroom performance. Such a restructuring of inservice education will necessitate fundamental changes in preservice education as well as in many other aspects of the school structure as we know it today. As Dean Theodore R. Sizer, Graduate School of Education, Harvard University, has stated:

> "...this is no time to prescribe improvements in existing programs. Continuing education cannot productively be conceived of as new or better courses for teachers offered by universities, or as some arrangements within schools for some kind of inservice training. What is needed before this is a fundamental rethinking of the education of teachers, or more properly, the education of educators. One must start with the assumption that an educator is never fully educated and that, like the best of the university professors, his intellectual and practical development is a continuous thing and must be nourished regularly."[1]

If we accept Dean Sizer's assumption, it becomes apparent that our present compartimentalization of preservice and inservice education must be replaced by a new perspective which views the "intellectual and practical development of educators as occurring along a continuum beginning with the decision to enter the teaching profession and ending only upon permanent retirement.

The remainder of this section will develop a set of guidelines for such a preservice - inservice continuum. These guidelines will be based on the use of hierarchies of performance criteria for two distinct but interrelated purposes: (1) diagnosing individual teacher education needs and prescribing from a number of learning alternatives designed to remediate those needs, and (2) evaluating teaching competency and growth as a teacher in order to determine initial placement and career advancement within a differentiated staffing structure.

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[1] National Education Association, Remaking the World of the Career Teacher. NCTEPS, NEA, Washington, D.C.: 1966. Page 14.

Before turning to the task of developing this set of guidelines for a model preservice - inservice continuum, it will be necessary to point out in greater detail some of the major defects of existing inservice education programs which the new model will have to overcome. The first of these defects is related to the teacher's motivation for becoming involved in existing inservice education activities. Although the stated purpose of a particular inservice course might refer in general terms to the upgrading of a teacher's professionalism, the major reason that teachers actually become involved in inservice courses is the desire to accumulate "units" which will move them horizontally across the pay scale. Many school systems inadvertently encourage this unit accumulation mentality by requiring that a certain number of inservice units be acquired during a given period of time by each teacher regardless of whether or not the available inservice courses or experiences are in any way related to the individual needs of the teachers. Actually, we begin to condition teachers during their preservice training to accept the fact that much of their formal teacher preparation is unrelated to what actually happens in their classroom and we reinforce this notion when the fledgling teacher applies for her teaching credential, so it is not entirely fair to blame our inservice education practices for the emergence of a unit accumulation mentally within the teaching profession. Nevertheless, teachers very quickly assess the irrelevant nature of most inservice activities and their understandable reactions range from a resigned tolerance to the avoidance of real growth opportunities where inservice credit is not available.

Another defect of existing inservice programs is the typically inconvenient timing and location of inservice activities. Most inservice activities or courses are conducted after school, on Saturdays, and during summer vacation and financial compsenation for this "extra time" requirement is extremely rare. Implicit within our time placement of inservice activities after the students have gone home or during donated time when school is not in session is the assumption that inservice education is a second class activity, not worthy of prime time or financial remuneration. In addition to our poor choice of time, the location for most inservice courses and activities seem to have been designed primarily for the convenience of the particular teacher educator involved. Inservice activities are typically located at nearby universities, in the central office facilities, in some other school and, on occasion, in the same building to which a teacher is assigned; but regardless of the choice, the location is usually inconvenient for a majority of the participants.

The typical inservice activity location and timing communicates very effectively the relatively low value placed on those activities by the school power structure. It is hard to conceive of a system more likely to have minimal effects on a teacher's classroom behavior than the current one wherein teachers must return to the University climate on Saturday morning, during their summer vacation, or at the end of a long and tiring workday, adopt the roles of students and struggle through the often tedious and rarely helpful process of listening to lectures, writing papers, taking exams, and quibbling over grades. If inservice training is to have any direct impact upon the education of students, then the timing and location must become much more closely related to the particular classroom setting in which a teacher is working and much less oriented toward nearby schools of education during secondary time periods.

A third defect in our present inservice education programs focuses on the inadequacies of the inservice instructors. Typical inservice programs feature marginal instructors using inappropriate techniques to communicate irrelevant content. A fascinating example of this is the university professor who lectures on and on about how teachers should individualize instruction for their students without ever illustrating through his own actions, that he knows how to practice what he preaches. The typical inservice education course treats all teachers as if there were no differences in either the amount of background knowledge possessed about the topic under consideration or in the rate or styles of learning among the inservice participants. Although the inservice content cited in the above example is relevant to the classroom, any inservice attempt to get teachers to recognize individual differences among students will be significantly undermined by an unwillingness to recognize individual differences among teachers.

One of the major reasons for the inadequacies of inservice instructors is related to the lack of imagination with which they are selected. The majority of these instructors are university personnel, school administrators and curriculum supervisors. The fact that all of these persons have been out of the classroom for some time and seldom return other than for extremely brief visits does not always help to keep inservice education in the right perspective. The point is not that all inservice education should be performed by classroom teachers, but it does appear that we are overlooking a major source of relevant inservice assistance by ignoring our classroom teachers. Regardless of where the inservice instructors are recruited from, we must rapidly change the prevailing practice whereby the inservice instructor, whether he is a university professor or a school curriculum supervisor, has absolute control over the course content and instructional techniques which will be utilized in a particular inservice program.

A brief summary of the major defects of our prevailing approaches to inservice education would focus on the irrelevancies of content, the inadequacies of instructors and the inconveniences of timing and location. When, in addition, we threaten to withhold promotions or salary increments for teachers who do not take part in such inadequate and inappropriate inservice activities as these, we encourage the development of a unit accumulation mentality toward inservice education which is totally unrelated to the improvement of classroom competency.

What, then is needed to make inservice training a viable concern -- to make it relevant to the professional growth of teachers and thus to the improvement of educational opportunities for students? First, we must admit, however embarrassing it may be, that the current structure of our educational system simply does not leave room for the kind of rationality which we would like to see in both preservice and inservice education. We have not, as a profession, gone beyond the development of rather vague criteria of good and bad in evaluating teacher performance. We simply have not devoted sufficient thought and imagination to the delineation of teaching tasks to know what kinds of skills and comptetencies are required in the various roles which teachers assume. What skills should a teacher of 8th grade U. S. History have that differs from those deemed mandatory in a teacher of 11th grade English? More importantly, what competencies need to be developed in a teacher to help him become a stimulating lecturer which might not be necessary were he to lead small group seminars?

The tragedy of our current system is not so much that it has not answered such difficult questions. Rather it is that it provides no means whereby they can be answered and, what is worse, makes it difficult to even conceive of asking them. Under the current system, where all teachers are treated as perfectly interchangeable parts, we cannot even begin to differentiate the various educational roles which teachers might play, and therefore, it is impossible to apply these diverse roles to the education of students with maximum efficiency. As the system now stands, we allow the teacher to face his five yearly groups of 30 students once he has received his credential - then he faces the same organizational pattern for the rest of his life receiving extra pay if he can survive long enough and accumulate enough units of inservice credit. We never find out what special educational talents a teacher has, and we never find out what skills he should have but does not. Without this knowledge, we cannot decide on the structure for a rational inservice training procedure which will help him to develop his own uniquely beneficial competencies. We never get around to these crucial matters because the system never directs our attention in these directions.

What is required, then, before sensible inservice training can be developed is a careful differentiation and task analysis of the various aspects of the teacher's role. The current structure of education makes such analysis impossible because its monolithic nature tends to wash out and camouflage all of the useful distinctions among teachers. Any significant attempt to restructure inservice and preservice education must be based upon the development and use of an educational structure which fosters and capitalizes upon the multiplicity of educational tasks which teachers can perform in our schools. We need to recognize in a viable institutional form the kinds of distinctions among teacher roles which make good educational sense: large group lecture vs. small group discussion leader vs individual tutorial worker vs curriculum development specialist, etc.

Operating within the perspective of a differentiated teaching staff structure would foster the recognition of significant distinctions among teacher roles - and it is at that point that we will be able to develop the performance based task delineations which will provide the key to a relevant inservice education program. As differentiated staffing becomes a possibility, then carefully thought out performance criteria for teachers become a necessity. A school which allowed for the possible diversity of teachers roles would be uniquely motivated and able to analyze and reformulate the criteria by which it would judge competence in any given teaching task. With such criteria, teacher training, both at the preservice and inservice levels, can become closely integrated with the main concern of all educators -- the educational development of students.

If teacher education is reorganized so that continuous relevant growth experiences are provided for teachers throughout their careers, then preservice education and inservice education will become a part of the same continuum. It simply will not do any longer to separate preservice from inservice experiences. We must, in the process of specified teaching performance criteria, set out our priorities in such a way that the credentialing procedure becomes a formality and professional growth becomes the criterion of all training experiences. Whatever criteria we settle on for preservice programs, and whatever training procedures we judge relevant at that level, must be applied and extended in our inservice programs. Insofar as we insist on the distinction between preservice and inservice training techniques we simply reveal our ignorance of systematic criteria by which we can assess the professionalism of our teachers. But as soon as we give serious attention to the development of such criteria the distinction becomes meaningless. The point here is not that the preservice and inservice training are, or should be, identical. Rather, it is that the procedures and goals of each must become specific and defensible in a way that they currently are not. We must make some tentative decisions regarding what criteria a teacher should meet before reaching a credential and what criteria should be met later as part of his inservice professional growth. With such modifiable decisions at hand we can begin to design inservice programs which have the continuity and rationality so clearly lacking in most current approaches.

Such an inservice program would be based on the hierarchies of differentiated performance criteria which have been developed elsewhere in this paper. Since at least two alternative training strategies have been provided for each of these performance criteria, and since each of the teaching roles within the differentiated staffing pattern involve combination sets of individual performance criteria, the sequence of training strategies utilized at any given time would be adjustable to suit the individual learning needs of a particular teacher. Under such an arrangement, a teacher interested in applying for a position at the upper level of the wage-responsibility-prestige scale would be aware of the particular set of performance criteria usually required for that teaching role. That teacher would then be able to select rationally from alternate sets of available training experiences a uniquely suitable series which could help him develop the skills and competencies necessary to compete successfully for the desired position.

It should be noted that all inservice assistance would not be oriented toward advancing to higher levels within a differentiated staffing structure. Role distinctions can and should be made within the same level as well as among levels, and in all cases these distinctions would be clearly stated in performance terms. If a teacher were interested in moving horizontally to another role at the same level within the hierarchy he too could select rationally from alternate sets of available training experiences those which would help him develop the skills and competencies necessary to meet the performance criteria for the desired teaching role.

Another way in which inservice assistance would be utilized under this system would be for remediating specific disabilities which existed in those individuals already occupying particular teaching roles. Under the present arrangement, even the best of teachers have specific areas of deficiency, and the delineation of performance criteria for each teaching role within the school would enable teachers to understand clearly what competencies are expected for each teaching role. Upon recognizing an area of skill or content deficiency within the currently occupied teaching role, the individual teacher could again select that set of training experiences which would most effectively assist him in remediating the deficient skill area.

Another function which would be served by such a performance based inservice program would be that of upgrading specific teaching roles in light of new educational discoveries. For example, as new discoveries are made in specific content or teaching skills areas, these discoveries could be translated into performance criteria which would then be added to the previously existing performance criteria for relevant teaching roles. In all cases where specific teaching roles are upgraded, it is understood that many of the existing performance criteria will be open to question and possible revision or deletion upon the introduction of new performance criteria. As new roles are discovered for teachers and as old ones are discarded, the various sets of performance criteria will undergo constant self-renewing change.

As individual teachers select and engage in alternative means of training toward the different performance criteria a substantial and useful set of data can be gathered to answer such questions as: which training procedures are most efficient in helping teachers to meet which criteria? For teachers with different initial competencies might it be that different training experiences are optimal in helping them meet the same criteria? For a given teacher with a particular set of aptitudes, what sequence of training procedure is most appropriate if he is to meet a given set of criteria? If we are to answer these questions with any confidence, it will be necessary to conduct meaningful research as an integral part of our preservice-inservice training program. For then we can begin to make intelligent decisions regarding the training procedures which should be added, dropped, and modified to make them more effective for teachers of varying individual talents. Given a sufficient amount of research on the success of teachers with varying abilities in medium content criteria through alternative routes, we might eventually develop the competence as a profession to predict the optimal training sequence for any given teacher in attaining any criteria. But until such research has been done, and in order to foster its being done, it is incumbent upon us to specify the criteria, provide alternative routes, and carefully analyze the success of different techniques in bringing invividual teachers up to criterion performance. To the extent that our imagination in providing alternate routes holds out, we will be able to assure that any intelligent teacher, no matter what his particular weaknesses are, will be able to meet any criterion through some inservice procedure.

In order to test out the preservice-inservice continuum ideas stated in this model, a given school of education and a cluster of elementary schools from one or more school systems would have to implement a series of organizational changes. Within this reorganized educational setting, teachers would be able to select from relevant growth experiences designed specifically to develop skills and competencies in particular performance areas. The four basic elements that such a reorganized educational setting should contain are:

1. Levels of responsibility based on differentiated performance criteria through which a person could grow as a teacher during a total career.
2. Areas of specialization designated within each level of responsibility.
3. A plan of initial placement and parallel advancement for each of the levels of responsibility and areas of specialization.
4. Supporting strategies and systems necessary to initiate, coordinate and maintain such a preservice-inservice continuum.

1. Levels of Responsibility

Of all the judgments rendered regarding present school organization, that which is most persuasive for change concludes that under present conditions many of the best teachers are leaving the classroom. There are a number of reasons for this fact, but they revolve largely around two issues. First of all is the question of economics. Under the present framework the teacher who aspires to a position of higher earning power and influence has open only two avenues; they must either leave the classroom for administrative positions or seek other employment. The teaching profession simply provides no alternatives. Each year an increasing number of strong, capable teachers are lost to the classroom for this reason. There is no lack of dedication here; these are often among the most able of teachers, the very ones who should be working with students. Left to the question of preference alone, many would choose to remain in the classroom. However, the severe restriction on earning potential drives them to take the only course open.

Of equal importance in the consideration of many who leave the classroom, is the conviction that as teachers they are important to bring about any basic change or reform in education. Teachers are charged with a responsibility for classroom instruction but are almost never given any real authority to alter its nature based on their own convictions. They serve on innumerable committees and councils for this ostensible purpose only to discover with endless certainty that the ultimate decisions will be handed down from above. The sense of futility which this produces causes many who are genuinely concerned to seek positions where they will have a chance to put their convictions into practice; they become administrators or quasi-administrators.

A way must be found to encourage talented people to chose teaching as a career and to have them elect to remain with students as they grow as teachers. Before this can happen, the decision-making role of the teacher must be expanded, and a prerequisite for such expansion is a complete resturcturing of the existing organizational pattern within the schools. Under the present system or organization, teachers spend much of their time doing many routine tasks which really do not require a trained professional teacher. Still they must be done and, while often trivial, they are in sum considerable - clerical detail, record keeping, housekeeping chores, and purely mechanical procedures. The accomplishment of these tasks on top of the mental and physical demands of actual teaching leaves little time or energy to devote to those things teachers say they would like to do, such as develop and refine curriculum, develop new instructional methods and techniques, and refine themselves as teachers.

On top of these regular demands on the resources of teachers there is then added the necessity of participating in any number of study committees, inservice training meetings, and planning sessions. These meetings are usually held before school, after school, and even during lunch. Attending such meetings takes a great deal of time and energy and is all the more disturbing to the teacher who knows that in general the meetings will accomplish little, will rarely change anything, and that in the end they will again be told what to do by a member of the administrative hierarchy.

One way out of this organizational dilemna in which we find the teaching profession is the development and use of a differentiated teaching staff. Such a differentiated teaching staff would spell out levels of responsibility based on a clearly defined hierarchy of performance criteria for each of the teaching roles within that staff. Under such an arrangement, a teacher could continue to grow as a teacher throughout her career without having to leave the classroom.

An example of such a differentiated teaching staff might be a four level structure within which both the levels and the kinds of teaching responsibilities could be assigned and rewarded in keeping with identified educational functions and professional needs. Under such a plan, teachers at the top two levels of responsibility would be hired on a twelve-month contract and those at the bottom two levels on the same ten month contract and under the same tenure rules as teachers are hired now.

Senior staff members, herein referred to as senior teachers and master teachers, would represent no more and usually less than twenty-five percent of the total staff and could not hold tenure in these positions other than that for which their annual performance qualified them. They would hold tenure, however, at the two lower levels, labelled here as staff teacher and associate teacher.

Despite what the labels might imply, this is not to suggest a new bureaucracy or hierarchy that gives recognition to an elite. Instead, it is to suggest a structure based on levels of responsibility in a teaching organization that takes its overall shape from what needs to be done educationally, both now and in the future in a given school, and from what teachers are available and best qualified to be responsibile for the tasks identified. This, of course, presupposes the identification of teaching tasks on the basis of performance criteria.

Master and senior teachers, as members of the faculty senate chaired by the principal (also a master teacher) would seek full authority from the school board and the superintendent to formulate new educational policies; to make decisions as to what educational functions should be served, how they should be served, and by whom they should be carried out; and in general govern the school as an autonomous body. This does not mean that the faculty senate would not seek outside help. On the contrary, it would seek and get the kind of help in introducing constructive change that schools have been cut off from up until now.

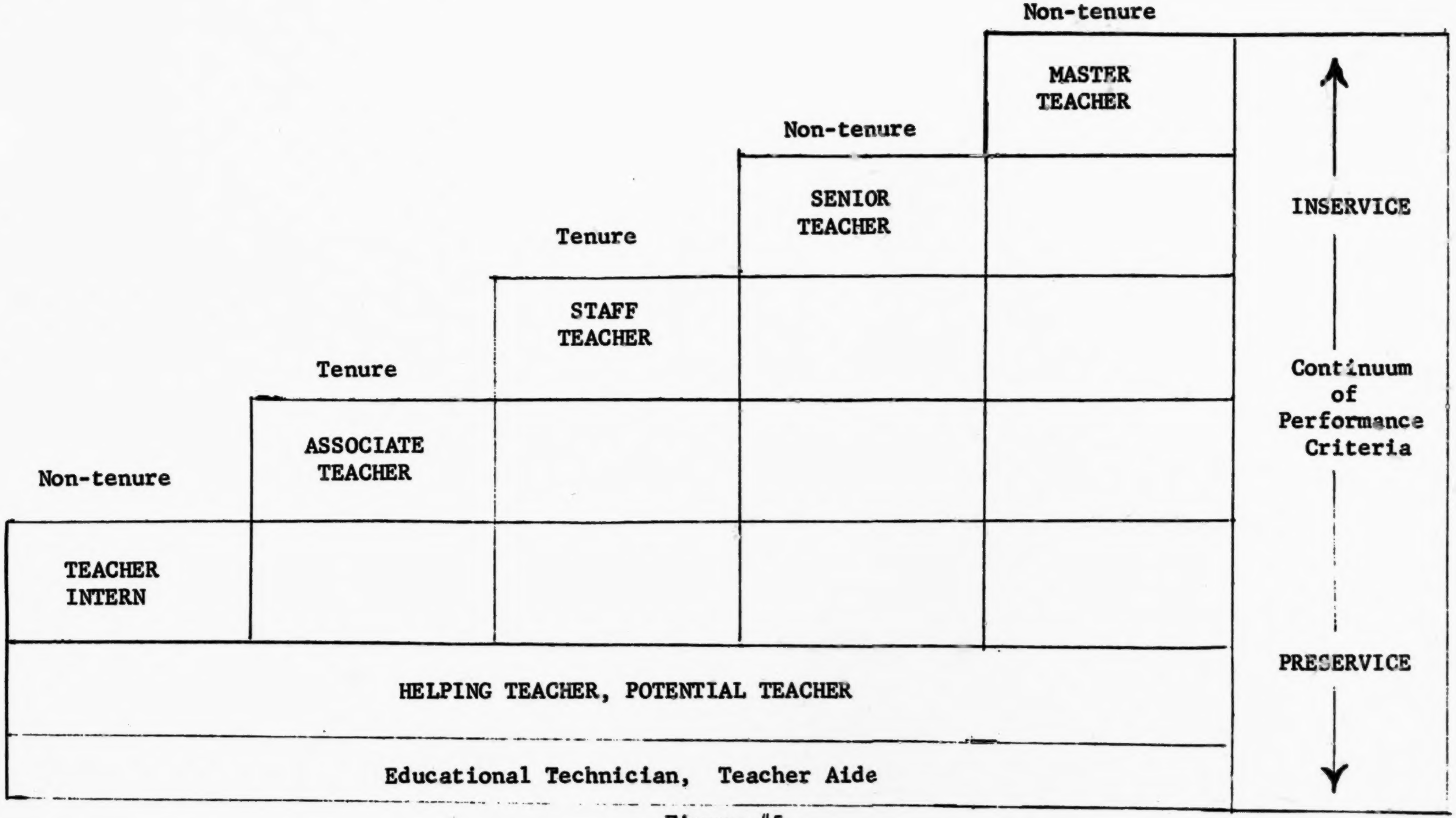
A brief summary of possible major differences among these four teaching levels might be that the master teacher would be responsible for shaping the curriculum, researching new instructional techniques, and investigating new modes of learning. The senior teacher might be responsible for making the concepts and goals of the curriculum explicit for a given course or grade level. The staff teacher then would be the most likely person to translate these curriculum units and goals into highly teachable lesson plans and, along with associate teachers, to assume the major responsibility for carrying them out. Although the major responsibility for teaching would rest with the staff and associate teachers, under a differentiated staffing arrangement no teacher at any level would be entirely cut off from teaching responsibility.

The foregoing examples, and the specific delineation of teaching responsibilities at each of the levels listed elsewhere in this paper are only possible example. It is important to remember that any rigid interpretations of these present categorizations could easily obviate the purpose of the differentiated staff concept by denying that differentiation is a dynamic principle to be applied over a period of time to roles within each level of responsibility and to specific functions within individual teaching roles. When the occasion and his particular skills demand it, a master teacher might spend some time on remedial work with a small group that normally would be handled by a staff or associate teacher. At the same time, an associate teacher with special knowledge or otherwise unattainable skill might be the principal lecturer in some inservice training program for senior staff members. It is by such exceptions rather than by some rules that the differentiated staff concept would prove itself valid.

Any proposal to employ teaching talent where it will do the most good must recognize that much of it is now being wasted at the ditto machine, monitoring the lunch room, taking role, and doing other jobs for which professional ability and salary are not necessary. In addition, persons with technical skills common to industry but new to education are becoming increasingly essential to school teaching staffs. Both economy and necessity recommend that the differentiated school staff include an expanded non-teaching category of classified personnel to handle clerical functions.

Although the differentiated staff structure might be arranged on a number of basic patterns other than the four level arrangement suggested here, three basic conditions are essential for any given differentiated staffing design. The first condition is that a minimum of three differentiated staff teaching levels must be established and each of these levels would have a different salary range. The second condition is that maximum salary at the top teaching category should be at least double the maximum salary in the lowest teaching category. The final condition is that substantial direct teaching responsibility should be a part of the job description for all teachers at every salary level, including those in the top brackets.

The following chart illustrates the various levels within such a differentiated staffing pattern, and a teaching career pattern emerges on the basis of levels of increased responsibility.


Non-tenure
MASTER TEACHER
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SENIOR TEACHER
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STAFF TEACHER
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ASSOCIATE TEACHER
Non-tenure
TEACHER INTERN
HELPING TEACHER, POTENTIAL TEACHER
Educational Technician, Teacher Aide
INSERVICE
Continuum of Performance Criteria
PRESERVICE

Figure #5
Differentiated Levels of Responsibility
Elementary Teaching Career

Potential Teacher. Initial interest in elementary teaching frequently comes in either elementary or secondary school. Programs such as high school cadet teaching would be developed at a number of age levels to give boys and girls some beginning experiences in teaching (under certain conditions students have been better teachers than teachers). Of all the activities of society, education has the best, built-in, captive pool of talent -- a natural area for research, study, and action programs which could be developed through school-university cooperation.

Helping Teacher. Compact tours of duty at various representative grade levels would help interested persons determine their "starting" age group in teaching. In addition, assisted teaching experiences in summer schools and camps, church schools, and in recreation programs could provide non-threatening first oppotunities in adult-child teaching situations. Pertinent testing, observing, and interviewing should occur at this level so that a person can be encouraged to enter (or to avoid) elementary school teaching. The basic difference between this category and the other helping categories (Educational technician and teacher Aide) is the Helping Teacher's interest in a teaching career.

Teacher Intern. This would be a person's first full-time, paid position in teaching. This could be conceived of as taking place during a flexible period of time which might start during the junior or senior year and last for several months, a year, or even two years. Teaching would be done in controlled, observable situations. Junior membership on a teaching team will probably be a part of most elementary internships of the future. Again, an individualized teacher counseling program would help the intern re-affirm or modify his original decision about teaching in the elementary school.

Associate Teacher. This level of responsibility would follow internship for most persons, but not all, entering teaching. The associate teacher's major responsibilities are in direct contact with students and with previously structured curricula. His strength lies in his ability to communicate with students, work with parents, and effectively implement the goals of the school district.

Staff Teacher. The staff teacher is the master prectitioner in his area. He is the exemplary teacher, one who possesses a great deal of experience and training and who has remained vital and imaginative. He is knowledgeable of the most recent developments in teaching and in his subject/skill area. The staff teacher is responsibile for the application of curricular innovations to the classroom. This role might be described as putting educational innovations into effect in the classroom and subjecting them to the modifications which arise from day to day experience. Out of this work should emerge refined curriculum, sound in theory and practical in the light of classroom experience.

Senior Teacher. The senior teacher's primary differentiated responsibility lies in the area of curriculum development. Based upon the most promosing trends in education, this individual will develop in detail new curricular material which will be tested, refined and eventually utilized on a widespread basis within the school district. The Senior Teacher should be able to achieve in his curriculum design the unity of sound research, understanding of the learning process, and utilization of instructional resources. He must have a scholarly depth of knowledge in subject matter or skill areas that will enable him to evaluate critically pertinent research and from it select those ideas, practices and principles that will contribute to the development of new methods and new programs of education. The Senior Teacher must be an outstanding teacher who possesses a practical knowledge of the teaching-learning process that will enable him to effectively guide the learning experiences of many students and teachers.

Master Teacher. This is the top level to which a person could aspire as an elementary teacher. The person would have demonstrated his ability as a master teacher -- perhaps as a teacher of many children and/or a teacher who can teach difficult concepts in attitude and interpersonal behavior areas. Master Teachers along with Senior Teachers would function in leadership and policy roles for the school. The major differentiated responsibility of the Master Teacher is to keep pace with the very latest trends and developments in his educational fields. He will read and investigate widely on many research fronts, availing himself of a variety of sources. In addition, he will keep abreast of current research techniques and function as the eyes, ears, and mind of the school district in curricular matters, bringing to the staff a constant flow of ideas emanating from research centers, universities and forward looking school districts. From this mass of materials, the Master Teacher must have the critical facility to select those ideas and materials which have the most validity and practical value for possible introduction into the instructional program. In addition to reducing the gap between the researcher and the field practitioner, the Master Teacher would be responsible for initiating research programs of a purely district interest among his colleagues.

Although the following helping roles would not normally be considered as a part of a teacher's career line, it is entirely possible that one significant teacher recruitment area that has been overlooked would be within the helping categories in a particular school. Regardless of whether or not these persons are considered as part of the teacher career pattern, there is no reason why capable individuals still at the pre-bachelors degree stage or individuals who have not as yet obtained teaching credentials cannot effectively carry out specific instructional roles within the differentiated staff of an elementary school. The following list of helping positions is by no means exhaustive, and the role differentiation at this point should be regarded as merely a beginning. As with the actual differentiated teaching roles, when these helping roles are implemented we will discover many subtle areas of effective role differentiation and specialization which we have not as yet identified.

Teacher Aide. The teacher aide would be involved in tasks such as collecting and distributing materials, grading certain kinds of student papers, and organizing, storing and retrieving information about students, materials, and human resources. In addition, the teacher aide might be responsibile for the typing, dictation, transcription, duplication and collation of materials, and the collection and display of relevant instructional materials. The teacher aide would also be responsible for the supervision of most noninstructional student time as well as selected areas of students' instructional supervision (e.g., monitoring programmed learning). The teacher aide would also be responsible for a variety of additional noninstructional tasks such as maintaining inventories, ordering supplies, taking attendance, providing first-aid services, and keeping routine records.

Educational Technician. The educational technician would be responsible for the effective utilization of all types of media within the school. He would set up and operate all audio-visual equipment within the school, or plan and implement effective training programs whereby student equipment operators might be utilized. The educational technician would be responsible for facilitating and developing the effective use of the entire range of available media throughout all aspects of the schools instructional program.

2. Areas of Specialization

The vertical dimension of the elementary teacher's career pattern consists of levels of responsibility; the horizontal dimension would consist of areas of specialization within each level of responsibility. Each of these areas of specialization would be defined by specifically delineating in performance terms those tasks which are required within each areas of specialization. Thus, the tasks required within the area of mathematics at the master teacher level would be a greal deal more sophisticated than those tasks required for mathematics at the staff teacher level. Before a teacher would have an opportunity to demonstrate his competency at the master teacher level within a speciality area such as mathematics, that teacher would have demonstrated his mathematics competency at every lower level within the differentiated staffing hierarchy because the performance criteria for each level would be constructed on a base consisting of all previous levels.

Since there are many possible differentiated staff models with different responsibilities **enumerated** it is our belief that trainees in our program should not be trained for specific roles in staff or instruction. Rather, the program should try to delineate the various tasks to be performed by a differentiated elementary school staff and offer training routes to accomplish these various tasks. Thus, the program would produce personnel trained as science specialists; evaluation specialists; generalists in small group dynamics, etc. The program would not attempt to classify these specialists and generalists as master, senior, staff or associate teachers. Instead, the responsibility for determining these roles would be left up to the individual schools hiring the specialists and generalists, and based on the performance levels achieved.

Even though all teachers would have to perform at a required minimum level a teacher could be promoted to a higher level of responsibility on the basis of his performance in one speciality area without significantly altering his competency profile in other specialty areas. On the other hand, a teacher is not restricted to specialization in just one area, and could receive an appointment on the basis of demonstrated competency in several areas. The important point to remember is that the individual teacher can be appointed to a higher level within the differentiated staffing hierarchy by specializing in only one area and the remainder of that teacher's competency profile is irrelevant to the differentiated staffing appointment within the area of specialization.

At the same time that the majority of a teacher's competency profile is irrelevant to a specific level of appointment within one area of specialization, the remainder of that competency profile serves a very useful function and competency profiles would be obtained for all staff members. The major reason for this is that if every teacher knows where his performance level is within each area of specialization he will also know exactly where his strengths and weaknesses are within each of those areas. Consequently, each teacher will be able to select specific in-service activities in other specialty areas if and when that teacher feels the need to increase his competency in those areas. Thus, a current competency profile for every teacher would form the basis for a continuous and relevant in-service education program.

A very important side benefit of the existence of such competency profiles for all teachers would be that an individual teacher's area of specialization and her level of competency within that area of specialization would be known by the teacher's colleagues. Thus, the individual teacher and all of his colleagues know each other's levels of competency within each area of specialization. Thus, a master teacher in mathematics can and should defer to the competency of a senior teacher in the area of supervision, to a staff teacher in the area of science, and to an associate teacher in the area of media. Under such an arrangement, it is quite possible to conceive of in-service education in the area of media being provided for a master teacher in mathematics by an associate teacher who happens to be a specialist in the area of media.

3. Initial Placement and Parallel Advancement Strategies

The initial placement and parallel advancement system would be developed from a manpower perspective which sought to tap all available sources of talent. These sources might include such diverse talents as: persons studying in fields other than education, homemakers who desire to work only a half day for just nine months a year, persons in other fields such as social work, recreation, law, and politics, and retired professional persons. Although some of these personnel might prefer to remain only in a nonteaching role within education (educational technician or teacher aide), there is no reason why anyone with the desire to enter into teaching as a career could not do so under the model proposed here.

The diagnostic placement and advancement plan contains a four step continuous cycle consisting of: (1) diagnosis, (2) prescription from alternate training strategies, (3) performance evaluation, and (4) placement. Everyone would enter into the cycle at the diagnosis step where his strengths and deficiencies for a specific teaching role would be diagnosed on the basis of whether or not he met the performance criteria specified for that teaching role. Where specific deficiencies existed, a prescription would be made from among alternate training strategies available which were designed to develop competency in that deficient area or skill. If the individual was then able to demonstrate his competency for a particular teaching role on the basis of his meeting the required performance criteria, he would be considered as a candidate for a particular vacancy. In cases where training strategies did not prove effective, the individual could recycle back through the diagnosis step and select an alternate training strategy for his particular deficiency.

Competitive supply and demand factors would be functioning throughout this system. A person could apply for any vacancy at his performance level or below -- but the need, the vacancy, would have to exist. He would have to be in competition with others similarly qualified. In addition, it is well to point out that the elementary school at every level is but one option open to the college trained person with professional preparation in education. There is a high demand for persons with training and experience in elementary education in other educational institutions and agencies as well as in industry, and, as a result, personnel will leave the system and return, again through diagnosing their ability to meet a specific set of performance criteria. It would not be necessary for a person to actually try out for or hold positions at every level before proceeding to the next higher level -- it is conceivable that a person could proceed through all of the diagnostic steps up through Master Teacher and be considered for a Master Teacher vacancy if he could meet the performance criteria specified for that teaching role.

Because of the availability of alternate training strategies for each performance criterion, it will be possible for individual differences in learning styles and rates to be effectively taken into consideration when linking together the components of an inservice education program. Two individuals could conceivably reach the same teaching role by using entirely different combinations of training strategies.

A teaching credential would be one of the prerequisites for entry into the first level of teaching, that of associate teacher. Under this plan, a teaching credential would come to symbolize only the beginning stage of a teacher's career long growth pattern as a teacher, and not the end of that growth as is often the case today. The variety of credentials available today could be significantly reduced because the special skills that they supposedly certified a teacher for would be measured by the individual teacher's ability to actually demonstrate his competency in those skills rather than just accumulate the university courses advanced degrees and years in the classroom which form the current requirements for advanced or special certificates.

4. Supporting Strategies and Systems

Alternatives to some of the criticisms which were raised at the beginning of this inservice section with regard to the inadequacies of present day inservice education programs have been suggested throughout the major portion of this paper. The teacher's traditional view of inservice courses as a series of "units" to be accumulated in order to move horizontally across the pay scale or into administration would disappear if those inservice activities were directly related to the improvement of a particular teacher's classroom performance. The preservice - inservice continuum suggested herein would effectively change the prevailing motivation for teacher involvement in inservice activities.

A second complaint about traditional inservice programs dealt with their inconvenient timing and location. Although much has been said about the rationale, structure, and kinds of experiences available under the proposed preservice - inservice continuum, very little has been said about location or timing. The majority of the inservice activities proposed in this model would take place in the school and possible even within the same learning area in which a particular teacher is teaching during the course of the regular school day. Since many of the routine tasks in education will be performed by teacher aides, the teacher will have more time to concentrate on the improvement of classroom instruction, and the most significant way of improving that classroom instruction will be for the teacher to pursue an individualized inservice education program as an integral part of her working day, the alternate training strategies available for a teacher's inservice program will be much the same as those available for students (ranging from videotape and Computer Assisted Instruction, to reading books and engaging in small group discussion) and there is no reason why the teacher's transition to the role of learner should not take place within a school facility which was designed specifically for learning. Although there may be an occasional need to leave the individual school setting to engage in specific training opportunities, this would be done only when those training options could not be obtained within the local school environment (e.g., to observe a specific classroom learning situation in a different socio-economic environment). When a teacher does decide to pursue a particular training strategy which takes him away from his school and possibly takes place at some time other than during the normal working day (e.g., an evening concert in a nearby city) the decision to select that particular training strategy will have been made by the individual teacher only after considering all of the other options.

Many of the inadequacies associated with the present poor quality of inservice instructors would be alleviated by creating alternate training strategies for each performance criterion. These alternatives would involve the use of a variety of media techniques as well as other faculty members within the school setting for specific training purposes, and the fact that each training strategy is optional and that individual teachers have a great deal to say about whether or not a specific training strategy is chosen will soon result in the elimination of any ineffective training strategies, including those which rely on ineffective colleagues.

Although the overall design of the preservice - inservice continuum and its various components would be accomplished through the combined efforts of personnel from a university and a cluster of elementary schools, individual training strategies might involve a number of diverse sources not currently involved in teacher training. Knowledge about audiovisual equipment might be best learned from the educational technician, content knowledge about a specific aspect of the Civil War might be most effectively learned from a noneducator who is a Civil War buff, and knowledge about adolescent behavior might be best obtained by talking to and observing some adolescents. The point here is that we have traditionally overlooked a large number of potential teacher-training strategies by restricting our definition of "teacher educator" to only those persons who have themselves been teachers.

Although there may be a number of ways to institutionally combine the efforts and resources of a school of education and a cluster of elementary schools in order to effectively carry out these proposal ideas, most of them will have the severe disability of having to involve establishment oriented personnel who will discover devious ways of circumventing the overall purposes of the proposal in order to protect their own interests. Therefore, it is imperative that the prime consideration in the selection of participating school districts and university personnel be their commitment to the goals of the project. Such places do exist, and as an example, the Temple City Unified School District (Calif.) has just this year begun to utilize a differentiated staffing pattern similar to the one described in this proposal on a Kg. through 12th grade basis. If the schools and university involved in the implementation of this model are chosen with care, the actual implementation difficulties will be significantly alleviated.

PLACEMENT SUBSYSTEM

PLACEMENT SUBSYSTEM

The role of the placement service will be to act as a clearing house for certified teachers. On one hand the placement service will continue as it always has been: supplying teachers, on demand, to the schools requesting them. Typically, however, little concern has been given to how the teacher will be used. That is to say, a teacher may have specialized in remedial reading, for instance, and then have been placed as a generalist, teaching all subjects. The schools into which the teachers were placed were not screened beyond geographic location and salary paid. The main concern seemed to be only that everyone was placed *somewhere*.

If the changes made in the certification area are to be felt in inservice employment, this kind of placement may not continue. The placement service must assume a much more active role than it has. It must actively seek out those schools which will deploy teachers in such a way that their potential may be more fully realized. This means that the placement service must screen out only those schools with some potential for staff differentiation, as many of the teachers coming from this program will be specialists.

This does not mean that the schools must be flexibly scheduled or have a differentiated teaching staff. It only suggests that the schools must express the desire to move toward differentiation. In this way the teachers will serve as change agents: resource people who may help the traditionally staffed school become differentiated in concept and practice.

The new role of the placement service will include such functions as personnel diffusion, follow-up, feedback, and evaluation. This concept of role is somewhat broader than the traditional concept, and its various aspects bear specification.

Personnel diffusion is the area in which traditional placement services have general concern. It involves the building of a career file of information about the various school districts; the amassing of information about the students, interviews with prospective teachers, contacts with schools offering positions, and notification of both employers and graduates of possible openings and teachers.

The placement service will undertake several formal changes to facilitate its operation in this area. All information, both about positions and teachers, will be stored in a computer bank. In this way, requests for specific kinds of jobs or teachers with specific backgrounds may be quickly found. The student's file will include a chart which will indicate the various levels of proficiency in terms of performance criteria. This will replace the traditional transcript. Student files will also include such nonquantifiable items as subjective evaluation made by various members of the department, chosen by the student at various times during his development, and a videotape of an interview between the student and a department member of his choosing. This tape may be sent to prospective employers when a personal interview with the student is not possible.

The follow-up and feedback function of the placement service is an on-going process of information gathering from those teachers already placed. They will report to the placement office any significant changes in their position, salary, school, district, et. They will also comment on attitudinal changes, and other more personal areas that may be relevant. This function of the placement service will serve at least two purposes: 1) it will assist the office in keeping career and student files up to date, and 2) it will make possible a variety of studies on recently-placed teachers. The feedback obtained from these teachers will be extremely helpful in evaluating both the success of the teacher-training program and the operation of the placement service.

The evaluation function of placement is one which will insure reassessment and continuous modification of the teacher-training program. It will permit the training institution to obtain criticism and suggestions from its graduates as well as from the various schools into which its teachers are placed. Criticism from an inservice perspective will be a valuable input that will encourage the school to remain truly innovative and relevant.

When the placement service functions effectively within these areas of personnel diffusion, feedback and evaluation, it will be able to expand its operation and offer unique assistance to the School of Education. It will, for instance, be able to place new teachers into a traditional school to act as change agents, receive information concerning their success in effecting change, and, when the innovative stage is completed, help relocate these teachers, if they desire, to repeat the process again in a new and fertile area.

It is possible that the placement service could maintain a computer tie-in with the other state schools and community colleges training teachers and para-professional supporting staff. This would mean that if a school district requested a large segment of a differentiated staff, the placement service could quickly retrieve the appropriate information. Not only would this better serve the needs of the schools, but it would also provide protection to individuals who are innovatively trained for new roles--protection which assures that they will be placed in a context in which their preparation will be used or extended.

To fully implement this service, it will be necessary to expand the present placement staff by adding new professional positions and supportive clerical assistance. Technical assistance in data gathering, storage, and utilization will be provided.

Prior to the placement of teachers trained within the limits of this new model, an inservice type experience will be sponsored on a workshop type basis by the School of Education. Initially interested school personnel in identified receptive climates will be invited to participate. One outcome might be the establishment of model hiring standards which could be adapted by those systems interested in staff differentiation. Overall, the emergence of more professional personnel practices would accrue for all involved.

Institutional and school district certification of personnel may become a reality more quickly under this system's approach to school staffing. Certainly, an opportunity to institutionalize feedback and channel communications between employee, employer, and training institution will be realized.

AREAS OF TEACHER PREPARATION

HUMAN RELATIONS

This report is an effort to bring training and education in human relations into sharper focus and to provide a system whereby instruction and experiences may be provided for teacher trainees in the skills of "being people." Society needs teachers who are capable of "warmth," "empathy," and "critical thinking." However, it is difficult to define these broad terms precisely and thus, the teaching of these concepts has been left primarily to personal examples, admonitions, or simply to chance.

Many, perhaps most terms and concepts of effective human relations behaviors which have been used in the past are too general to be defined adequately or taught efficiently. A systems approach, coupled with performance criteria and the conceptions of behavioral systems leads to a fuller understanding and more precise definition of human relations functioning.

However, neither systems analysis nor a behavioral approach provides a fully adequate picture of what man should be. It is here, when we start defining the goals of teacher education, that the humanistic and religious traditions become most important. A value commitment to the specific behaviors a teacher should be able to engage in is necessary. The teacher trainee will be allowed and encouraged to participate in the defining of his own behavioral objectives once certain minimal standards are achieved.

I. Human Relations Defined

Human relations is not a mysterious activity. Rather, it is a codifiable set of behaviors which describe what goes on inside a person or between people. Human relations is defined as behaviors exhibited in relation to self and other individuals, and in relation to groups. Thus, an individual thinking about himself is engaging in human relation behavior. As Skinner has stated (1968), "To think often means simply to behave." In this case, the direct observation of behavior is available only to the individual behaving. Two individuals meeting in an interpersonal interaction are engaging in human relations behaviors. School classrooms or group dynamics sessions are situations in which an awesome number of human interactions are going on. In short, any human behavior or behaviors engaged in intra- or interpersonal activities represent human relations behaviors.

From this viewpoint, it is clear that all behavior exists in a human relations framework. Essential to our work in human relations is Gestalt therapy's conceptions of the unified nature of man. Distinctions among intellective, physical, and emotional experiences inevitably are faulty categorizations.

> "The average person. having been raised in an atmosphere of splits, has lost his wholeness, his integrity. To come together again, he has to heal the dualism of his person, of his thinking, and of his language. He is accustomed to thinking of contrast--of infantile and mature, of body and mind, organism and environment, self and reality, as if they were opposing entities. The unitary outlook which can dissolve such a dualistic approach is buried but not destroyed and...can be regained with wholesome advantage (Perls, Hefferline, and Goodman, 1951, p. viii)."

One can split the person arbitrarily into many types of divisions, but each of these is artificial. Any action or activity of the human organism reverberates throughout the entire intra- and interpersonal system. For example, a headache may make a teacher irritable. In turn, he is unnecessarily harsh with a pupil who may in turn respond by arguing with his brother at the dinner table, etc. All parts of the individual are related to each other and to others in the environment.

It should be clear that the notions of Gestalt therapy as described here may seem in almost complete conflict with the notion of specific skills and performance criteria in human relations. It is our belief, however, that one can take specific skills of human relations and build them into a hierarchy to produce the wholeness emphasized by Gestalt theory. This method, of course, is similar to approach of the Gestalt therapists.

A key question enters here. What specific human relations behavior lead to the sense of wholeness described in Gestalt therapy? Or, more simply, what type of human relations behaviors do we wish to see exhibited by our teacher trainees? It is theoretically possible to train individuals with the skills to perform a sadistic task comfortably, or one that involves deep warmth and human conviction. Although the problems of how to teach certain behaviors could be approached from a behavioristic position, philosophy and religion seem to offer more attractive descriptions of what man can be.

We have also tried to include some dimensions of the humanistic approach in our work with performance criteria. In his book, Personal Knowledge, Michael Polanyi expresses the view that human experiences and feelings are more than the sum of their several behavioral components. There is an area of the unexpressable which makes each individual separate and unique. Martin Buber speaks of this unexpressable uniqueness when he writes of the global "thou" in his book, I, Thou. If one is to relate to others in a truly human manner, writes Buber, one must view others as total entities in the tradition of Gestalt psychology and not as an object made up of different parts. He says, "If I face a human being as my Thou, and say the primary word I -- Thou, to him, he is not a thing among things, and does not consist of things."

It is suggested that although performance criteria can not easily describe global and complete individuals, they will nonetheless sharpen the conceptualization of the ultimate kinds of empathy, joy, and other human relations behaviors that we are hoping for. The highest levels of human experience can best (and perhaps only) be described by personal report. This personal report, however, could be considered a performance criterion.

Thus, the examples of specific performance criteria discussed in the following section and the appendix represent value decisions. It is believed that constructs such as empathy, respect, and spontaneity are good and worthwhile. Further, we have attempted to define these constructs in terms of specific behaviors. It is a statement of faith through our experiences as human beings. It is also believed that it is possible to teacher these constructs to teacher trainees and give them a more complete sense of wholeness. It is this sense of wholeness which comes from the binding of the conscious and unconscious mind in a single experience that is our definition of joy.

II. A Systems Approach to Human Relations Behavior

This represents an effort to integrate Gestalt psychology and behaviorism within the framework of systems analysis. We have stressed the wholeness of man and the fact that any effort to divide human experience into parts may be artificial. Yet, it seems clear that if one is to understand human experience fully, it may be necessary to separate mind from body, psychology from physics, or self from others. Study of this nature, however, should never hide the fact that any one area of human or life functioning is inter-dependent with other areas.

A. The Concept of Behavioral Systems

It is most difficult to study or teach the "whole individual" except by considering parts of that individual separately or in relatively small groups of behaviors which seem to tie together. What is needed is a willingness to experiment with alternative views of the human being in an effort to produce a person more aware of his individuality and wholeness. Huxley (1966), for example, suggests that we have done a good job of educating the verbal and intellective senses in man, but have neglected the "non-verbal humanities." He considers the possibility of educating students to use their imagination through fantasy, to learn how to enjoy the sky or a green blade of grass, to control pain, or they could develop the "art of watching and receiving."

Many different ways to divide human experience could be considered. Drawing on concepts of systems analysis,[1] one might consider the person first as a total system. We are here considering what might be termed the intrapersonal system. Within that person are many behavioral systems. If all behavioral systems within the individual are functioning effectively, the total person or system will also operate smoothly. Most individuals, however, have some behavioral systems which operate less effectively than others. While the total system or person may operate, it does not function fully effectively. For example, the scholar whose physical system is afflicted by indigestion generally cannot operate at peak intellectual efficiency. The systems within the individual affect one another and the total functioning of the organism. Relatively little consideration has been given to the interrelation of these systems within the human organism.

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[1] An analogy to the air transportation system might be drawn. This system consists of many parts of subsystems, ticketing, scheduling of planes, mechanical considerations, passenger loading, baggage handling, etc. It is recognized that if any one part of the system breaks down, the total system cannot function adequately. Thus, during a strike, all parts of the system except people to run the system are there. Or, one might consider the oft-repeated cry of the passenger, "It takes me longer to get my bag than it did to get here." Similarly, the individual system consists of many subsystems, each related one to another. Effective human relations training should consider as many subsystems of human behavior as possible.

The individual, however, does not operate solely within himself. He also operates in a world in which he relates with other people. The totality of his relationships with others could be viewed as his interpersonal system or his relationship with different individuals within his environment as interpersonal subsystems. His relationships within key interpersonal subsystems (e.g., parents, school) will affect the totality of his interpersonal system and other interpersonal subsystems. For example, difficulties in the parent subsystem may affect his school subsystem. Or a difficult session with a schoolmate may affect the way he relates with his teacher. It may be seen that interpersonal subsystems interrelate one with another much as do the intrapersonal subsystems.

As a next step in the definition of behavioral systems, the interrelationship of intrapersonal and interpersonal systems should be considered. One's intrapersonal state affects his interpersonal relationships profoundly. For example, a student may have an intrapersonal self-picture that is unfavorable. This may be combined with the subsystem of poor physical health. He then may encounter in an interpersonal subsystem a teacher (with subsystems of her own). He may speak sharply to the teacher. The reaction he gets from her depends very much on her own intrapersonal and interpersonal factors. Yet, perhaps it is this very complexity of interlacing issues that best describes the human condition.

The concept of behavioral systems, then, might be summarized as follows:

1. The individual is seen as a complex, intrapersonal system consisting of also complex subsystems. Potential examples of intrapersonal subsystems would be the ability system, the anxiety system, the attentional, the self-concept or self-evaluative system,[2] and the physical system.

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[2] Factor analytic studies of Cole and Oetting (1968) have indicated the existence of the ability system, anxiety system, and attitude system. They believe that these systems are relatively distinct, but yet that they relate or intercorrelate in certain areas. If their early research is indicative, it may be possible to identify key subsystems within the intrapersonal system with some precision. However, it is recognized that this framework of systems and subsystems remains a tentative theoretical structure at this time.

2. This same individual also operates in an interpersonal system of which he is but a part. This interpersonal system consists of, for example, two individuals or two intrapersonal systems. These two individuals may choose to relate in a more or less total fashion and then their intrapersonal systems may have to relate totally. On the other hand, they may choose to relate on only a few or even a single area and thus only one part of their intrapersonal systems comes into contact with the other.

3. Intrapersonal and interpersonal systems and subsystems relate in a highly involved and complex fashion. The more individuals who enter the total interpersonal system, the more complex the pattern of interactions.

A behavioral system approach demands commitment on the part of the observer to parts of the interpersonal and intrapersonal functions. Complete indentification of all the functioning systems is undoubtedly impossible.

B. A Behavior System Consists of Specific Behaviors

If one returns to the molecular level of behavioral acts or events, a specific behavior may be part of several subsystems and exhaustive (and exhausting) research would be required to determine to which structures or subsystems and behavior belonged. Thus, we end with a circular question resembling the question of the chicken and the egg. Which comes first, the behavior or the subsystem? One way out of this dilemma, of course, is to consider thinking as behavior. The individual through introspection can identify specific acts of thinking and these can in turn be organized into subsystems. The complexity of this approach almost staggers the imagination. This is, however, the task that orthodox Freudian analysis has set itself. And even here, the focus seems to be only the subsystems of emotion and intellect.

To return to our airplane analogy (see footnote page 79), let us suppose we have a break-down in the system of airline transportation which is traced to the subsystem of baggage handling. There are two approaches which could be used to solve this problem. One is minute study of the subsystem to determine where it is failing, and once this failing is discovered, the part will be redesigned or repaired and the system can operate again. However, airlines have found that this approach solves the problem only temporarily. The system continually is imposing new tasks on the weak link of baggage (increased traffic flow, more freight).

An alternative or second approach is increasingly being used in air transport. That is, an effort is being made to redesign the total subsystem or even the total transport system. There may be more than one way to solve the baggage problem and there may be more than one way to solve the air transport problem. Thus, solving a seemingly small baggage problem may involve redesigning the whole air transport system. However, a redesigned and more effective system may not break down and may be sufficiently flexible to grow and develop.

Similarly, we as psychologists and educators can search for the weak link in the ability system or anxiety system and attempt to repair the behavior associated with it. This is the medical model of repair used by clinical psychology and most approaches to psychotherapy. Another approach seems feasible. This is one in which we make value commitments as to the type of person we want to see produced. We can determine what type of behaviors are desired. In effect, behavioral technology is approaching the stage where can redesign the human system much as the airline redesigns the transport system.

As we have suggested, specifying behavioral objectives and performance criteria in the area of human relations is an attempt to define the undefinable. Let us begin by considering one of the most basic human relations experiences, empathy, being fully aware of another person's experience. We believe that empathy consists of several specific behaviors. One of these is "attending behavior" (Ivey, 1967) and would be described as: (1) maintaining eye contact with the other person; (2) physical attentiveness in terms of an attending yet relxaed posture; and (3) verbal following behavior in which the individual simply stays on the other's topic and does not introject any new information of his own, except his own understanding. Another aspect of empathy is Rogerian "reflection of feeling." This skill is related to attending behavior, but the trainee in this case attends primarily to the feeling or emotional statements of the other (Ivey, Normington, Miller, and Morrill, Haase, in press). Physical empathy is another skill of the total construct of empathy. This is simply assuming the physical posture of the other in an attempt to feel more closely what the other is feeling.

Now, none of the above specific skills is empathy but they are often considered parts of the empathic person. Minimum empathy might be defined as simple attending behavior. Stronger empathy is represented by reflection of feeling and the physical imitation which tend to make empathic understanding more real. If these specific skills are engaged in, true empathy becomes possible. Let us illustrate in as precise terms as possible:

> I look another person in the eye and follow his discussion. I attempt to forget myself and focus on him. The other person finds this rewarding (we seldom have others really pay attention to us). He reacts by being more animated or simply more real. This in turn reinforces me and it is possible to "lose oneself" in the other forgetting that one began to attend artificially.
>
> A deeper empathy is possible, however, if one centers on the emotional feelings of the other. Again, one must start reflecting feelings artificially, but it one lets himself "go" he loses himself in the other.

> Deepest empathy occurs spontaneously. One completely loses sense of self and becomes "one with the other." It is primarily rewarding, but it can also be a frightening experience. Yet, it is also as close as one person can be to another. Those who have experienced empathy at its most complete stage draw an analogy to sexual experience.

Two levels of performance criteria could be developed for each of the three types of empathy described. The first is directly behavioral depending on observations of eye contact, number of verbal following statements, etc. The second level when one forgets self and loses himself in the other can be measured only by self-reports which can be partially verified by others. For example, a teacher may report he "lost himself" in the attending session. This would require verification by the individual talked with. Did he feel the teacher really attended and understood? This could be validated further by external observers who felt the intense involvement either did or did not occur. Self-report then becomes the second level of performance criteria.

Thus, it is possible that specific behavioral skills may lead to broad, almost mystical experience. Performance criteria can be established for basic dimensions of attending behavior, reflection of feeling, and physical posture. Performance criteria can also be developed for deeper dimensions such as true empathy, if we are willing to accept a personal report. It should be observed at this point that the integration of experience developed through specific behaviors ("losing oneself" in the second level of performance criteria) could be considered a definition of Gestalt theory's integrated experience. Thus, specific behavioral skills, if planned carefully, may lead teacher trainees to integrated experiences.

Another view of the same experience could be supplied by Polanyi (1966). Polanyi believes we have made a false assumption in believing that we acquire knowledge best by studying it. As an example of experiential learning, he points out that chess players can best understand the expertise of the chess master by entering into a "master's spirit by rehearsing the games he played, to discover what he had in mind." In essence, Polanyi is stating that one can best understand knowledge by experiencing it.

The concept of tacit knowing is used by Polanyi to summarize activities we engage in without thinking of details. When one swings a golf club well, sings a song beautifully, or dances a difficult ballet, there is tacit knowledge of what is done. Moreover, if the golfer, singer, or dancer thought in detail of all the actions or specific behaviors he has engaged in, the quality of the action would not be possible. Many specific behaviors have been integrated into one large action. Some people seemed to have learned naturally. They seem almost to have a mystical rhythm which enables them to perform complex tasks without ever having thought about them. But it seems equally possible to teach the details of behavior with the expectation that the human being can himself integrate them into one action.[3]

Returning to human relations skills, it is our intent to program specific behaviors insofar as possible with the expectation that teacher trainees will be able to integrate these skills naturally into their being. Some human relation skills may remain forced, prepalnned, and thought out, but our expectation is that adequate programming can produce tacit understanding of these complex behaviors in a majority of teacher trainees and that this is the first step toward true acquisition of these human relations skills.

Personal joy was optimistically included in the heading of this section. We suggest for consideration that the feeling of personal joy comes in a situation in which consciousness (programmed or planned behaviors) becomes fully integrated with the unconsciousness (the second level of performance criteria). One can plan for conditions to bring this about, but must forget these conditions to fully experience joy. Examples of personal joy are the "high" of empathy or complete sexual experience, losing oneself in method acting, realizing a class period is over when it seems as if it started only five minutes previously, making a goal in basketball, or being truly aware of a beautiful sunset.

Summary: If one accepts the view expressed here, it is helpful to consider the role of performance criteria in this framework. Performance criteria are useful in that they force more precise definitions of the behavior to be taught. As suggested earlier, it is possible to define specific behaviors associated with empathy such as attending, reflection of feeling, and physical posture. (We feel somewhat encouraged at being able to specify these human relations relatively precisely.) We also recognize that this is a primitive first step and many changes are necessary with research and experience. However, the main criterion of terms such as empathy in the sense of a tacit understanding probably will elude our efforts unless we are willing to rely on the person's often highly emotionally charged statements such as, "Now I understand empathy." However, we do have reports of others to validate that personal experience. If the client or the other person feels the teacher trainee was empathic, we have an observable result. We cannot share in that experience of personal empathy, but we can observe the impact of empathy on another person and that observation can be verified by viewing a videotape of the actual interaction.

III. The Teacher Trainee and the Program in Human Relations

The primary overall performance criterion for the teacher trainee is to be defined by the trainee himself in consultation with an advisor and evaluation specialists within the human relations training team. A week long orientation program tuned to the activities, methods and goals of the human relations training program will be developed. The teacher trainee will enter this experience and after the conclusion of the week, the trainee with consultation assistance will determine his behavioral objectives. The primary performance criterion to that teacher trainee will be the degree to which he achieves the objectives established.

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[3] Interestingly, Skinner (1968) has observed that "behavioral processes, such as learning, discriminating, generalizing, and abstracting...are not behavior, but changes in behavior." Skinner doesnot believe it is necessary to teach generalization, for example, but it may suffice simply to teach the behaviors which lead a person to make abstractions or generalizations. The parallel between the statement and Polanyi's more philosophical comments is noteworthy.

A secondary measurement for performance will be changes in the individual's self-concept which will include the accuracy of others' perception of him and the way others actually do perceive him. It is believed that an effective program of performance criteria in human relations will result in a teacher who has a more accurate and positive picture of himself.

These two overall performance criteria for teacher trainees are discussed in some length in the appendix of this proposal.

While the major emphasis in human relation training is on an individualized program of human relations performance criteria, certain minimum and overall performance objectives have been specified:

> The teacher trainee will complete a minimum of three physical awareness criteria, two of these to be the ability of relaxing his own body to the satisfaction of a traineed observer and the ability to teach relaxation training to an elementary child.
>
> The trainee will demonstrate a general understanding of the concepts of human relations.
>
> The trainee will demonstrate his ability to maintain attention (attending behavior) and selective attention in a five-minute micro-counseling session. He will also demonstrate his ability to attend to the many diverse events in a classroom as represented by his ability to identify and classify behaviors as observed on a video tape and a real life classroom situation.
>
> The trainee will complete three of the performance criteria associated with flexibility and decision process.
>
> The trainee will complete all the performance criteria in one section of interpersonal system skills (dyadic, small group, classroom, or organization) with modifications as suggested by consultation with his advisor. In addition, he will complete at least one of the performance criteria associated with the other three areas.
>
> The trainee will complete training in "direct, mutual interaction," a videotaped microteaching procedure in human relations training.
>
> The trainee will complete one set of performance criteria at the highest level thus demonstrating theability to perform at professional competence in one area of human relations training.

The training alternatives for these and other performance criteria are many. Ivey (1968), for example, has summarized over 80 references to various types of human relations training programs. This paper reveals the extreme wealth of experiences available to teach human relations skills. They range from programmed texts and detailed curricular guides in human relations training to Yoga exercises and Zen meditation. Ivey cites the work of Schutz (1967), Perls, Hefferline and Goodman (1951), and Raths, Harmin, and Simon (1966) as especially useful guides to human relations training. The human relations proposal describes the human relations training and teacher alternatives in some detail.

IV. Performance Criteria Outline

The following organization of performance criteria represent value decisions of the task force. It is our belief that meeting these criteria will help develop the fully functioning person. As indicated in the systems section of this report, the teacher trainee will select with the help of an advisor which of the performance criteria he wishes to meet. Certain basic criteria for teacher performance will be established and tested.

The performance criteria have been organized as follows:

Section I. General Performance Criteria for Human Relations

Section II. Intrapersonal System Skills
- A. Awareness of self as self
    - 1. Physiological and non-verbal skills
    - 2. Verbal skills
- B. Awareness of self in relation to self and others
    - 1. Attending behavior skills
    - 2. Flexibility skills
    - 3. Decision-making skills

Section III. Interpersonal System Skills
- A. Dyadic interactions
- B. Small group interaction
- C. Classroom interaction
- D. Organizational Interaction
- E. Specific Issues
    - 1. Sexual awareness
    - 2. Racial relations

It may be observed that the organization represents something of a division of human experience. However, the divisions presented all have as their goal the development of whole, integrated experience and are organized in sequence from rëlatively small behaviors through increasingly complex dimensions. This is with the belief that as the teacher trainee understands himself physically, he becomes more aware of himself. As he becomes aware of others, he learns how to function more effectively in dyads and small groups. Wherever possible, the specific performance criteria have been organized on a hierarchical basis with elemental behaviors leading to more complex behavioral patterns.

At the final stages of human relations training, it is our belief that the specific behaviors listed here will become automatic leading the teacher trainee to the highest kinds of human experience. All the specific behaviors outlined here have as their goal the development of the fully human person.

BEHAVIORAL

In the past year, two members of the University of Massachusetts School of Education faculty, Dean Dwight W. Allen and Dr. James M. Cooper, have co-authored a series of technical skills for elementary and secondary school teachers with Dr. Robert N. Busch and Dr. Kevin Ryan which will be published by General Learning Corporation in the Fall of 1968. These materials include model films of teachers demonstrating 18 technical skills of teaching which had been developed at the microteaching clinic at Stanford University; student manuals, which include written descriptions of the skills; training protocols for acquiring the skills; written transcripts with editorial comments of each model film; skilled drill sheets with which to practice a skill before attempting it in microteaching and an evaluation sheet for each of the skills.

In addition to the 18 existing technical skills new skills will be developed. The General Learning materials will not be used as a closed-ended package, but an open-ended one.

Consistent with the alternative instructional routes principle, various types of practice opportunities are being developed to supplement the microteaching concept which is presently the main process for the practice of technical skills.

Each skill requires that the trainee demonstrate the specific teaching behaviors in a microteaching situation or an actual teaching situation. For each skill, performance criteria have been developed so that the supervisor and the trainee viewing the video tapes of the teacher's lesson will be able to determine whether or not the trainee has met specific criteria for that particular skill. When the supervisor has determined that the trainee has met the criteria for each skill, the trainee will then proceed to try and master the succeeding skill in the package. Performance criteria for each of the skills are listed in Appendix I. A list of 18 technical skills of teaching to be used in the training program at the University of Massachusetts are organized in five overriding themes which are:

A. Response Repertoire
B. Questioning Skills
C. Increasing Student Participation Skills
D. Creating Student Involvement Skills
E. Presentation Skills

A. RESPONSE REPERTOIRE

The exercises in this package are designed to help teachers broaden their repertoire of responses to various situations in order to increase the variety of means at their disposal to communicate better with students. The focus is on developing a variety of both verbal and non-verbal responses. There are three main practice situations involved:

1. Verbal responses--in this exercise the teacher reads statements which might be said in a classroom and gives at least three different meanings to each statement. In other words, reading the same words, the teacher states them in three different ways in order to give the statement three different meanings.

2. Non-verbal responses--in this exercise the teacher is presented with a list of non-verbal responses and a list of different emotions or feelings. Using combinations of non-verbal techniques, he will try to convey certain emotions or feelings. Essentially, it is an exercise in pantomime.

3. Verbal and Non-verbal responses--in this exercise the teacher is presented with a list of non-verbal responses. He then goes through the list of verbal statements again, this time combining non-verbal responses with appropriate verbal statements.

These exercises are not practiced in a regular microteaching situation with students, but with a supervisor or colleague present.

B. QUESTIONING SKILLS

1. Fluency in Asking Questions--the emphasis is on the teacher asking as many questions as possible during the lesson. This skill is practiced in order to develop a new teaching pattern in the classroom for the teacher who tends to depend too heavily on the lecture method. Having achieved this goal, the emphasis can be placed on higher order or divergent questions.

2. Probing Questions--Probing requires that teachers ask questions that require pupils to go beyond superficial "first-answer" questions. This can be done by: (1) asking pupils for more information and/or more meaning; (2) requiring the pupil to rationally justify his response; (3) refocusing the pupil's or class's attention on a related issue; (4) prompting the pupil or giving him hints; and (5) bringing other students into the discussion by getting them to respond to the first student's answer.

3. Higher Order Questions--Higher order questions are defined as questions which cannot be answered from memory or simple sensory description. They call for finding a rule or principle

rather than defining one. The critical requirements for a "good" classroom question is that it prompts students to use ideas rather than just remember them. Although some teachers intuitively ask questions of high quality, far too many over-emphasize those that require only the simplest cognitive activity on the part of the students. Procedures have been designed to sensitize beginning teachers to the effects of questioning on their students, and to provide practice in forming and using higher order questions.

4. Divergent Questions--these questions are characterized by the fact that there are no "correct" answers. They are usually open-ended questions. They require the students to think creatively, to leave the comfortable confines of the known and to reach out into the unknown. They ask students to make hypotheses and use their imaginations to reorganize concepts into novel patterns.

C. INCREASING STUDENT PARTICIPATION SKILLS

1. Reinforcement--an incentive skill used by the teacher to reward students for proper behaviors. The skill focuses on the teacher's use of positive reinforcement to increase student participation in classroom discussions.

2. Recognizing Attending Behavior--a skill designed to sensitize and alert the teacher to what is going on in his classroom by observing the cues his students present. By observing their facial expressions, body postures, activity or non-activity directed behaviors, and conversations, the teacher can tell a great deal about their interest level and attention span. From these cues the teacher can make judgments about whether to continue the activity, change it, slow down, speed up, or use a different mode of instruction. Recognizing student attending behavior is a prerequisite for almost any kind of classroom instructional or management decision.

3. Silence and Non-verbal Cues--this skill is designed to allow the teacher to control and direct classroom discussions without talking. Non-verbal communication is one of the most neglected means of teacher-student communication, but one of the most powerful. The skill focuses on the controlled use of teacher silence to get students to speak, and on techniques of non-verbal communication.

4. Cueing--this skill is designed to give the teacher much more control over the success experience a student has in answering a question or in making a comment. By cueing him ahead of time and through the kinds of cues the teacher gives him, the teacher can greatly increase his chances of making a worthwhile contribution to the class.

D. CREATING STUDENT INVOLVEMENT

1. Set Induction--this skill is concerned with properly preparing students for some upcoming activity. It includes an interesting and/or novel way of introducing the activity, and establishing common frames of reference between the teacher and students in order to facilitate communication. It is basically an initiating activity by the teacher.

2. Stimulus Variation--this skill deals with both verbal and nonverbal techniques of stimulating students in order to preclude boredom and apathy in the classroom. It is basically concerned with the teacher varying his behaviors in order to keep the students attentive and alert.

3. Closure--this skill is complementary to Set Induction. It consists of teacher acitvities which will help the students perceive a logical organization of the main ideas and pieces of factual information presented in the lesson. In addition to pulling together the major points and acting as a cognitive link between past knowledge and new knowledge, closure provides the pupil with a needed feeling of achievement.

E. PRESENTATION SKILLS

1. Lecturing--training in some of the successful techniques of lecturing is the focus for this skill. Delivery techniques, use of audio-visual materials, set induction, pacing, closure, planned repetition, and other skills related to lecturing are included. Rather than saying that lecturing is bad as an instructional technique, this skill tries to consider: (1) when it is effective to lecture, and (2) how to lecture effectively.

2. Use of Examples--the use of examples is basic to teaching for good, sound, clear teaching. Examples are necessary to clarify, verify, or substantiate concepts. Both inductive and deductive uses of examples can be used effectively by the teacher. Effective use of examples include: (1) starting with simple examples and progressing to more complex ones; (2) starting with examples relevant to students' experience and knowledge; (3) relating the examples to the principles or ideas being taught; (4) checking to see if the objectives of the lesson have been achieved by asking students to give examples which illustrate the main point: (5) the use of analogies and metaphors to relate the unknown with the known, or to liven up the examples.

3. Planned Repetition--The purpose of this skill is to clarify and reinforce major ideas, key words, principles, and concepts in a lecture or discussion. The use of planned repetition is a powerful technique in focusing and highlighting important points, and describing them from a different point of view. Improper use of this skill can cause confusion and poor learning among the students, while proper use can direct their attention to points which the teacher wishes to emphasize. The skill focuses on techniques of Literal repetition--(1) Simple repetition, (2) Spaced repetition, (3) Cumulative repetition, and (4) Massed repetition.

4. Completeness of communication--although the importance and need for clear communication is blatant, it is not often the guiding principle in actual communication. Sensitivity training on the importance, and the difficulty, of being understood is the focus of this skill. A classroom game has been devised which dramatically demonstrates to teachers that what they consider to be clear instructions are often not clear at all to the students. Sensitivity training in the skill of communicating with others will hopefully produce teachers who are more responsive to possible miscommunication.

AESTHETICS

Aesthetics education in the schools has been a relatively untouched area. It is true that art and music is taught in the schools, but it has never been handled in such a way that the student really gains any deep understanding (or love) of what he was doing or why. A conceptual basis for understanding and experiencing art forms has never been developed. Our school system as well as our culture has become more and more oriented toward verbal communication. The arts, however, for the most part do not deal with the verbal world, and our skills in the use of words can not help us very much in understanding the aesthetics of vision and sound. We must therefore turn to the development of non-verbal sensitivities and skills.

The arts are non-verbal communication. They are expressions which draw on our sensory experience and memories. Each art form deals with a particular sensory area. Painting and sculpture rely on the visual senses; music, audio senses; and dance, the kinetic senses. The theatre and cinema deal with all of these sensory areas and then interweave them with verbal expression. In our program of aesthetic education, we will develop skills and understanding in each of the sensory areas distinguished by an art form. In order to understand and gain pleasure from a work of art, it is absolutely necessary to have an understanding of the media from which it is constructed.

Every creative person in the arts, no matter what discipline, utilizes three basic skills: The first skill involves the ability to free oneself from perceiving things within the limits of verbal description, and develop skills which increase the variety and complexity of sensory intake. In other words, this skill would enable one to see more within the visual world thereby increasing the number of entries in the teacher's visual vocabulary. This increase of entries may be seen as the gathering of a bank of visual experiences that may be used in different forms of non-verbal communications. A great deal of pleasure arises simply by increasing the variety of perceivable visual stimuli.

The second skill is the ability to form relationships between these sensory experiences. Things formerly unrelated and kept separate by symbolically limited verbal definitions can find comparison through common sensory characteristics. The discovery of sequences and systems of sensory relationships leads to a further understanding of the particular aesthetic medium.

The third skill is the development and intensification of the aesthetic experience. An aesthetic experience is a unique and elusive (physiological, emotional and intellectual) reaction to the recognition of the unity of relationships between sensory experiences. In this area, we begin to relate the first two skills to existing works of art.

The aesthetics study program will attempt to teach these three skills within each particular sensory area and its related art form. Hopefully, because this three fold approach deals with basic and personal experiences, we can develop an honest and personal appreciation for aesthetics.

The performance criteria which attempt to realize these skills in prospective teachers will follow in the appendix. However, it is felt that these same criteria may be used by teachers in their own classrooms with respect to their own students.

Because the study of aesthetics has not appeared in the schools in this manner before, it is difficult to establish at what grade level each step should be handled. However, we think that the first skill of increasing sensitivity to sensory experiences can begin immediately in kindergarten. Ideally, each individual child could then develop along the hierarchy to more complex experiences and relationships. The last area of study, the aesthetic experience, would then probably begin in the latter grades. Establishing grade levels for this program is an area where a great deal of study and research is needed. It is possible that the child developmental work of Jean Piaget may be helpful in this area of planning.

Visual understanding and subsequent expression in the visual arts is a venture requiring realization in two ways: (1) an understanding of historical artistic tradition which is public and generalized, and (2) self-understanding, which is individual and personal.

The first presumes an understanding of the various methods by which artists, through history, have developed visual relationships as a means of aesthetic expression. The second presumes an understanding of one's personal world and the influence of one's own perceptual processes upon visual relationships.

The visual world can best be understood by simplifying it into the interaction of two basic areas, matter or objects, i.e., the things that we see, and light or illumination, which enables us to perceive matter and describe objects. When there is no light, we cannot see at all. The visual patterns that are developed by the interaction of these two basic areas are of two distinct types: static, or spacial; and dynamic.

Dynamic visual relations differ from purely spatial or static relations in that they are patterns undergoing transformation, and in so doing extend in time. In order to conceive of a visual pattern undergoing transformation we must assume that it has a beginning and an end, that it originated at some instant in time and will terminate at some instant in time. To understand this fact is to realize that the pattern of change we call a transformation has a unique structure.

In order to contend with dynamic visual patterns in an aesthetic way the time required for a transformation to take place must remain within the perceptual range, that is, neither too fast nor too slow. For instance, the transformation that a mountain undergoes through erosion is visually insignificant, the process is too slow. The mountain has the same appearance all the time and is viewed as being static and stable rather than dynamic.

There are a great variety of visual transformations; such as chemical and physical changes that can be observed, but the various characteristics of motion comprise the major portion of our experience with dynamic visual patterns.

Traditionally education in the visual arts has ignored the dynamic patterning and structure of vision and concentrated solely upon its static aspect.

The first part of this proposal follows this tradition. However, with the ever increasing extension into our everyday lives of dynamic modes of visual expression and communication it would be remiss to continue to ignore these dynamic visual structures in education. Therefore, part two of this program will explore the dynamic structure of vision.

In structuring the performance criteria for each of the following visual sub-topics and when classroom conditions allow it, a correlation between two and three-dimensional experiences will be established. In some cases, the two types of experience will coincide in the same criterion, but mainly they will be noted as separate criterion.

In general there are two main types of manipulative techniques for achieving performance criteria. They are:

1. Simplified Techniques. Manipulative exercises which incorporate materials, such as paper, that minimize the use and development of motor skills. From this approach the teacher-trainee will be expected to provide, with a given material, a visual demonstration of a particular visual phenomena.

2. Complex Techniques. Manipulative exercises which incorporate materials such as paint, that require the development and use of motor skills. From this approach the teacher-trainee will be expected to provide, with a given material and motor skill, a visual demonstration of a particular visual phenomena along with the extension of these qualities toward more complex visual relations.

Within each of these approaches there will be a hierarchy of complexity for each group of performance criteria which each group culminating in activities wherein each individual teacher-trainee develops personal methods of exploration for that topic. This point is crucial for any program in aesthetics. At all stages of development a balanced relation between text demonstrations and individual personal exploration must be maintained. In order to realize the nature of aesthetic relations each person must realize the role that they as individuals play in the total aesthetic experience.

The Kinetic Senses. The goals for the re-education of the kinetic senses are numerous, but the primary ones may be divided into three categories. First is the ability to free oneself to perceive sensually. Students do not often attend to the sense impressions which emanate from their environment. They are often dull to the many things which they see, taste, hear, and smell. Often they cannot tell the color of the room in which they are sitting. They look but do not see; they hear but do not listen; they move but do not feel. They are afraid of the strength and power of their own perceptions. A teacher of children must be a sensuous individual, and must be able to guide his students through valuable sensational experiences. By relearning forgotten pleasures and experiencing new pleasures and feelings, the teacher's ability to guide others will become far greater.

The second of these goals is the ability to relate sensuous experience to others. It is firmly believed that one cannot fully communicate to others the sensations of one's body. Only alone does one experience his physical self, and to try to convey that experience is to lose some of its personal value. Nevertheless, if a teacher is to guide children into their own sensual experiences, he must be able to relate experiences which are meaningful to them. He must be able to conjure images which are relevant and which will make their new experiences even more deeply felt.

Music. The art of music has always tried to maintain a significant difference between 'noise' and 'musically' acceptable sound. Since music depends on degrees of organization and systematic usage to be comprehensible to a given society at a given time, it is evident in the light of historical, psychological, and ethnomusicological studies that what constitutes significant differences of conception varies from culture to culture, from age to age, and indeed from style to style. What appears as noise to one person can be sublime musical expression to someone else.

Presently we live in an age in which for many and varying reasons we are exposed daily to an incredibly wide gamut of musical styles and techniques. This variegated exposure is strongly affecting musical habits all over the world, and it is abundantly clear that our conception of music in American has undergone a very substantial and radical change particularly in the 20th century. While it is necessary to deal consequentially with these developments, it is to be noted that the means by which music is taught in the schools and especially on the elementary level, have not kept pace relative to the fundamental and sweeping nature of the alteration in musical substance and technique.

As an example, there is the unreasonable and unnecessary emphasis on reading skills, which prematurely binds and confines the sensibility and ability of the young to the relation of eye and ear. Although there is certainly every reason to associate the eye with the ear, the strain of correlating the built-in bias of an outmoded musical system to its related notation, inhibits and unnaturally constrains orderly musical development at a crucially early time. It would seem more reasonable to work strictly with sound production and meaning. In other words within a simile system of composition and performance, creation and recreation will endow the student with a practical ear skill which easily translates itself into physical expressiveness and conceptual modes prior to the introduction of the traditional notation. In fact, and as has been alluded to, there are many who believe that the traditional musical notation is obsolete and serves no other real function any more save that of preserving in the manner of a museum, the old music. Whether or not this is the case, it is believed that a student with a real tactual sound orientation can at a later time master the skill of reading music, be it the traditional kind or more pragmatically notated.

One finds too, that in early school music training a great reliance is placed on the singing of so called 'folk' songs as the only means of presenting significant literature. Unfortunately the utilization of such materials relates only dimly to most children's environmental set and conceptual framework. This in turn unreasonably prepares the student for a musical role which has no realistic continuation. This is not to say that these materials are irrelevant per se, but that their use to the exclusion of just about everything else is questionable.

*In a more positive vein, then, the object of any good music pro*gram is to gain for the teaching candidate and eventually through him his students, the ability to make music and appreciate the art of sound on some significant level from the simplest and most general in the early years to the complex and specialistic modes of maturity. We propose that by starting with the simplest materials of composition, the candidate can reach the necessary degree of skill to create and recreate with significant results.

Student-Teacher Contact. Aside from the choice of materials, the problem of instruction hinges in great measure on the contact between teacher and student. It goes without saying that there are people with the special aptitudes necessary to become professional musicians and teachers who are prepared to cater to the needs of the musically gifted young. On the other hand it is not practical to have expert specialistic treatment available at all times. For this reason it would be a step in the right direction if the generalist, the classroom teacher who must serve the all encompassing needs of the young, had some musical training, in order to deal with the manifold problems which might arise. For the generalist to function efficiently it is assumed that he will be able to perform any of the operations for which the student would be held responsible. Of course this means that the more musically capable the generalist is, the further he might be able to take his class. Yet a rock-bottom minimum of acceptable information and experience can be transmitted by those whose talents are developed if only in small degree. It is assumed that such 'impairments' as tone-deafness might prove to be a serious obstacle for the would be teacher on almost any level of music instruction.

Although the problem of the existing music literature is dealt with only slightly and peripherally it should not be assumed that it has no current relevance. On the contrary, each candidate, no matter how 'generalistically' oriented, has to seek out a wide range of the literature and listen to it honestly, faithfully and critically. It would then become possible, what with the general availability of phonographs and tape machines, to selectively expose their students to a variety of music. This in its turn will help create a musically sound society on the early level. It might even lead to a relatively common-practice vocabulary with the richness, fullness and expressive power to mirror the excitement of our time and place.

The Surrender to the Possibilities of Sound. It should be pointed out that this statement of purpose and brief outline of performance criteria is at best arbitrary and incomplete. Whereas it suggests specific approaches to given problems there are manifold alternatives to reach the same ends. The problem of music education from the lowest level on a hierarchical spiral, to the furthest and most sophisticated level of transcendental artistry, is that it is too comprehensive to be dealt with on a summary basis. This outline may be qualified by explaining that the simplest tasks expected to be perfected by the candidate with the minimal experience can gradually be intensified to cause these tasks to be a challenge to the professionally competent musician.

But the task itself is not really a *sine qua non* for 'certification' or an obstacle course of some kind that having passed over it qualifies a person to "teach music." At best it stimulates the mind and sets it into channels which may have relevance to the transmission of knowledge of sound. However, we must always keep in mind that music is an art with an overwhelmingly large past and present. Without a searching curiosity and love for, and a surrender to the possibilities of sound, there can be little of value passed on. The first and primary task of the candidate is to assume as an article of faith the meaningful and expressive potential of sound.

Beyond the assumption of faith, there is the need for the candidate to make an existential order out of the infinite reaches and limitless varieties of the sound continuum. This then is music composition, and even on the crudest, most primitive level, aesthetic choices must be made.

LANGUAGE ARTS

Communication is the prime focus of the Reading and Language Arts area. The function of a teacher in this content field is to develop or improve the students' ability to communicate. This ability must include the communication of self and of emotion--areas in the repertoire of language as communicaton which up to now have been ignored in education. The Language Arts include listening, speaking, reading and writing. We believe that it is necessary that an individual be able to freely communicate information, ideas, attitudes and emotions effectively, commensurate with today's and tomorrow's needs and developments. It is important, therefore, that techniques of communication, such as non-verbal cues, use of new technological developments and simultaneous use of multiple media be incorporated into curricula for the education of children and of future teachers. This is not to dispute the effectiveness of books and other printed materials for use in reading; records, tapes, and traditional classroom verbal activities for speaking and listening; and typewriters, pencils, pens and paper in writing. Traditionally, successful media need not be ignored or discarded, but their use must be maintained only when they are the most relevant and applicable materials.

In order that the Language Arts teacher perform his function adequately, he must satisfy four aims:

1. He must demonstrate knowledge of the process of communication. That is, he must be able to analyze what acts are necessary for effective communicaton, whether or not the process depends upon a sequence of skills or any special combination of skills, and what the specific skills of listening, speaking, reading and writing entail. In addition, no knowledge of content process is possible without knowledge and understanding of the developmental and learning processes involved in the acquisition of the content knowledge.

2. He must demonstrate proficiency in the content areas. Proficiency or lack of it may be self-evident in the demonstration of the teaching of the content; nevertheless proficiency is of sufficient importance so as to require explicit demonstration.

3. He must demonstrate the ability to assess the child's level of deveopment and to diagnose his skills needs formally and informally. He must recognize strengths as well as weaknesses, and must help the child to do the same.

4. He must demonstrate the ability to select an appropriate approach from many known approaches based on the individual child's diagnosed strengths, weaknesses, developmental stage, and observed learning patterns. Part of the ability to select an approach is the ability to help a child acquire a given skill by dividing the skill into a number of levels ranging from the simple to the complex, the familiar to the unfamiliar, and the concrete to the abstract. The teacher must also be able to interrelate the skills as well as the areas of communication and to integrate them into the child's domain.

Flexibility and individualization are prime emphases in the Language Arts. Approaches and evaluative criteria will be used only as long as they demonstrate their usefulness. No specific item or suggested procedure is so crucial to the program that it cannot be amended or eradicated, should the need for so doing become evident.

A high and low level of competence for each performance is suggested. Alternate routes by which candidates may prepare themselves for satisfying the criteria are listed. These alternate routes do not include all the available options, and are structure so that a high degree of flexibility is maintained. One route, for example, is "appropriate practical experiences," which could include any or all, or other than the suggested practical experiences listed in the appendix. "Appropriate activities in the curriculum and learning center," and "appropriate field trips" carry the same kinds of alternatives.

As innovations and new techniques arise they will be incorporated into the program. If certain techniques or practices prove ineffective, they will be changed or discontinued.

Candidates' suggestions will be welcomed. Individual research studies will be encouraged. Especially here in the content area of the Language Arts, communication will be open and continuous.

THE SOCIAL STUDIES

Within this portion of the document, we have concerned ourselves with the ability of a prospective teacher of social studies to utilize the social sciences as a functional means for understanding the many facets of society. Rather than setting forth an extensive list of areas in which the teacher should be knowledgeable, the emphasis is upon the ability of a candidate to organize and analyze his knowledge, and upon his skills in locating and discriminating between resource materials when knowledge must be researched.

Also of prime concern is the sensitivity of the teacher to social phenomena within the classroom, and his ability to convert unique social situations into meaningful "social studies".

With these considerations in mind, the prospective teacher's competency in the social studies will be examined in four separate areas:

1. An ability to organize and analyze social science knowledge.
2. An ability to use the basic tools and skills of the social scientist.
3. An understanding of value orientations which affect societies throughout the world.
4. An ability to make social studies a meaningful part of a student's developing awareness of society.

Each of these areas will be considered separately in the following sections. Examples of performance criteria are listed in the appendix.

Area 1: Organizing Knowledge

Given the knowledge revolution in the social sciences today, it is neither humanly possible nor desirable to expect prospective teachers of elementary social studies to recall a plethora of isolated factual data.

Instead, it is suggested that prospective teachers develop the ability to utilize a cross-disciplinary framework or model which will offer a structure for understanding human affairs anywhere in space and time. The model would provide a workable framework for examining, analyzing, and synthesizing knowledge from within the social sciences. It would also aid the teacher in determining what knowledge was readily available and what knowledge must be researched in order to further illustrate and expand the model.

An oft-criticized aspect of social studies teaching is the quiz-show information approach. Since a model organized around and the use of concepts would demand that the teacher place information in perspective and examine its significance in the context of society, it would help drive the "quiz-show" approach into obsolescence.

The model to be suggested shortly is an adaptation of the conceptually oriented framework submitted to the task force by Dr. David Leonard. It is believed that this model is sufficiently encompassing to incorporate any knowledge found within the social sciences, as well as being sufficiently workable in terms of the needs of the elementary teacher. Rather than asking the prospective teacher to deal with a model in a purely abstract form, this model is easily broken down into smaller, more specific, and consequently more manageable concepts and areas of concern.

Methodologically, the prospective teacher would approach the "suggested model" in the following way:

1. At any given time the prospective teacher in the social studies would be given an outline of the model, instructions describing its use (including examples demonstrating procedure, ways in which it would be used to analyze social studies topics, etc.), and a list of performance criteria relating to his ability to "organize and analyze social studies knowledge using a conceptual framework (model)." The candidate will take the necessary time to familiarize himself with the nature and use of the "model".

2. Thereafter, he may proceed in alternate ways:

   a. attempt to satisfy any number of the performance criteria immediately.
   b. construct a model to his own satisfaction or choose a social science model which he feels will better serve his needs: then proceed to "c" or step #3.
   c. sign up for a discussion session with a Professor/graduate student and a group of peers to discuss, clarify, and test the model. At this time, prospective teachers may suggest other models and their suitability will be discussed. A major goal of this and perhaps succeeding sessions (if desired) is the emphasis on integrating knowledge and ideas, inductive thinking, reasoning, and realizing how such a model encourages you to go beyond the factual data approach. (These sessions would be the recommended route.) Upon termination of the group session, the prospective teacher would be encouraged to further consider and assess the model approach.

3. When staisfied with his preparation, the prospective teacher will be asked to demonstrate his ability to analyze and organize social phenomena using either:
   a. the "suggested model."
   b. another model.
   c. a combination of models: more than one model.

"Demonstrating ability" will consist of satisfying the performance criteria provided earlier. If successful, the prospective teacher will be regarded as competent in organizing social studies knowledge.

Once again, it should be emphasized that the concern is not with the prospective teacher's mastery of the subject matter to be taught at a particular grade level, but rather with his attitude and approach toward social studies knowledge. If he is capable of developing well organized thoughts and ideas around a complex subject, then it is confidently believed that he will be able to understand and organize subject matter from elementary textbooks. (His actual ability to do this will be focused upon in another area of the report.)

The Leonard "Cultural Model": A Suggested Framework for Organizing Knowledge.

Dr. David Leonard views "culture" (defined as "the totality of the means by which any human group lives") as having three components which together can incorporate any social phenomena:

Material (all natural items plus those things derived from them - food, shelter, tools, etc.)

Social (any relationship of individuals; any institutional arrangement)

Symbolic (includes languages, number systems, belief systems, values, rituals, the creative arts, etc.)

Using these three components as basic organizers gives one a framework for studying any aspect of human society. For instance, if one wished to consider "war", or a particular war, he could view it in material terms, social terms, and symbolic terms.

In order to simplify the examination of social phenomena (or general topics in the social studies), a list of "conceptual areas" are also provided which allow for the further breakdown of three broad components. Thus, the prospective teacher, using this model, has two alternatives for organizing knowledge: he can use the three components and break them down into his own areas of concern, or he can use the following matrix-type outline with its various conceptual areas:

Figure 6.

CULTURAL COMPONENTS

CONCEPTUAL AREAS	Material	Social	Symbolic
Physical Environment			
Role of Individual and Groups			
Institutions			
Ethos			
Continuity and Change			
(Others)			

(Note: Ethos is defined as the "underlying value structure and belief systems which influence cultural reactions." "Others" refers to additional areas which the prospective teacher may feel are essential for organizing knowledge).

In order to use this form of the model, the teacher would consider the particular conceptual area underlying or influencing the social phenomena (topic) under consideration and examine it with respect to the components. For example, the influence of the "physical environment" on the Revolutionary War with respect to:

Material - e.g., rough terrain often restricted troop movement.
Social -- e.g., bitter winters lowered morale.
Symbolic - e.g., spirit and confidence of outnumbered Yankees because much of the terrain was suitable for guerrilla tactics.

The prospective teacher will be urged to break the model down further for his own convenience in examining and analyzing topics. For instance, he might view "Institutions" in terms of aspects which are common to any institution: organization, continuity, role, and rules and regulations. Or a particular institution may be of major importance in the consideration of a specific topic. Consequently "Government" might be examined with respect to what it must provide people: justice, security, policy, and other services.

When overlapping of concepts or ideas occurs within the model, it should be viewed as an asset rather than a point of confusion. It enables a prospective teacher to realize that a single topic can be viewed from various directions and in numerous dimensions, thus enhancing one's overall perspective of the topic.

In cases where the prospective teacher feels that a particular topic should be considered within a conceptual area, but, for some reason it doesn't appear to "fit," the teacher should not feel constricted to the given format. Although this structure appears to incorporate most topics, it is not always successful and consequently the individual teacher is left to work his ideas where he feels they best apply.

Complete instructions for the use of the Leonard model will be provided including a definition of all concepts and terms used (with examples when necessary). Sample topics will be examined using the model in order to establish guidelines for the prospective teacher's satisfaction of the performance criteria.

Other models also will be included as examples, ranging from very specific psychology, sociology, and political science models, to that developed by Leslie White (based upon universal problems in all cultures: Ideological, Attitudinal, Sociological, and Technological). Whatever type of model is used, however, it is believed that a greater effort to integrate ideas and concepts will develop, and that this characteristic of the prospective teacher as a learner will become an essential asset in his teaching.

(Note: Because of the comprehensive social science background necessary for the satisfaction of performance criteria in this area, it would be suggested that the prospective teacher approach Area 1 criteria as the culminating exercise in his social studies preparation.)

Area 2: Skills of the Social Scientist

As a second area of competence within the social studies field, the prospective teacher must demonstrate an ability to use the basic tools and skills of the social scientist. The prospective teacher will be examined with respect to the following types of skills:

I. Analysis and Interpretation of:

  A. Written social studies communications.
  B. Audio and visual social studies communications.
  C. Maps, globes, graphs, and charts.

II. Locating and Using Information from Reference Sources.

III. Recognizing and Analyzing Social Science Problems.

Each of these skills and their rationale for consideration will be discussed below.

I. Analysis and Interpretation.

A. Written Communications: The concern here is with the ability of the prospective teacher to identify main ideas, to recognize the author's purpose, and to determine whether biases exist within given social studies material. The teacher will also be expected to understand the rationale for the structure and format of newspapers, periodicals, textbooks, etc.

B. Audio and Visual Communications: Again, the concern is with the ability of the prospective teacher to identify, within social studies audio-visual media, main ideas, existing biases, and to determine whether biases exist within given social studies material. The teacher will also be expected to organize the ideas presented using his chosen "model" and to indicate what use he would make of the particular medium in the classroom.

C. Maps, Globes, Graphs, and Charts: Since a basic skill of the social studies teacher is his ability to "read", interpret, and locate information on the above, competency in this skill is expected.

II Locating and Using Information from Reference Sources.

As stated previously, the vast amount of knowledge found within the social studies makes it unreasonable to expect the prospective teacher to be well versed in every field or in all subjects. Rather, it is more realistic to stress the organization of social studies material and the skills necessary to locate such information. Consequently the prospective teacher is expected to demonstrate an ability to locate and use material from reference sources.

III. Recognizing and Analyzing Social Science Problems.

> An essential aspect of one's handling of the social studies is an ability to identify situations which can cause conflict and to respond adequately to such situations. In order to succeed at this later task, a prospective teacher must be able to recognize the relative strengths of alternative solutions, to defend a chosen solution, and to realize that not all problem situations are perfectly soluble.

Areas 3 & 4: Sensitivity, Improvisation & Value Orientation

Having attained competence within the intellectual realm of the social studies--organizing knowledge, and social science skills, the prospective teacher must recognize his unique role within a very special social context--the classroom.

The classroom provides a microcosmic sample of society-at-large. The person who is perceptive enough to realize this can begin to comprehend the true essence of social studies teaching; for it is his task to create an "affective laboratory" within his class ro the study of social phenomena as they spontaneously emerge. In accepting the opportunity to act as an incarnate aid to the being and becoming of other people, the social studies teacher must also assume the responsibility for making as much of what goes on within this context meaningful to his students and to their understanding of the world society.

Value orientations are inherent in the presentation of social studies material at all levels. It was felt that it would be unwise to demand from all prospective teachers conformity of value beliefs even of the most fundamental nature. However, we hold that familiarity with value positions which have affected and are affecting the course of mankind is essential to the proper presentation of social studies material. This includes value positions that are contradictory to the democratic ethic, as well as those compatible with it.

At the same time, the teacher must seek to achieve compatibility between his presentation of social studies material and the needs of his particular group of students. All these things necessitate an ability to merge the knowledge and ideas found within the three areas previously discussed with the reality of an actual social situation. Consequently, social studies teachers must be sensitive toward people and their motives, and must be able to improvise - to respond creatively and meaningfully (in a social sense) to any type of situation developing in the classroom.

In order to understand exactly what is expected of the teachers, it is essential for the reader to examine the performance criteria for these areas located in the appendix.

SCIENCE

Within the teaching of science there are three major areas of concern. Content and process knowledge and the thinking which leads to and emanates from that knowledge and the thinking which leads to and emenates from that knowledge may be thought of as the first major area. The values and attitudes which one brings to and takes from the study of science may be thought of as the second area of importance, while the scientific skills which one needs to operate successfully in science is the third target area. The approaches to all of these areas, hopefully, will engender within each student the kind of individual scientific method that will excite and free him to become a totally aware and attentive scientific practitioner. It is hoped that the student will exhibit this awareness and attentiveness as the reflection of a truly gestalt wholeness within himself.

Knowledge and Thinking

The knowledge of science may be thought of as the systematic and connected arrangement of knowledge within a logical structure of theory. However, science is also the actively thoughtful process of forming such a structure. There is a lack of durability inherent in scientific knowledge. Scientists realize and accept this fact and attempt to alter their structures of thought as their discoveries are made. There are, however, a small number of theories, laws, and principles, which provide the basis for interpreting a great variety of phenomena.

It might be of value to list partially some of those conceptual schemes as put forth by the NSTA Curriculum Committee in their monograph, Theory Into Action.

1. All matter is composed of units called fundamental particles: under certain conditions these particles can be transformed into energy and vice versa.

2. Matter exists in the form of units which can be classified into hierarchies of organizational levels.

3. The behavior of matter in the universe can be described on a statistical basis.

4. Units of matter interact. The bases of all ordinary interactions are electromagnetic, gravitational and nuclear forces.

5. All interacting units of matter tend toward equilibrium states in which the energy content (enthalpy) is a minimum and the energy distribution (entropy) is most random. In the process of attaining energy transformations or matter transformations,

matter-energy transformations occur. Nevertheless, the sum of energy and matter in the universe remain constant.

6. One of the forms of energy is the motion of units of matter. Such motion is responsible for heat, and temperature and for the states of matter, solid, liquid, gaseous, and plasma.

7. All matter exists in time and space and as science instruction occur among its units, matter is subject in some degrees to changes with time. Such changes may occur at various rates and in various patterns.

8. All living things are in a state of change.

9. An organism is a product of its heredity and environment.

10. All organism are in a state of interrelationship within an ereosystem.

Indeed, it would seem that the general principles and the characteristic features of the methods of physics, chemistry or biology are as important and definite as the principles of these sciences and should develop into the general methods of science on the same level as any concern with scientific principles or laws. Implicit in this would be the importance of using the various kinds and forms of inductive search for truth.

A differentiation between the so-called predictive sciences (chemistry, physics, etc.) and the non-predictive sciences (biological) must also be made. The former produce unvarying data relative to those produced by studies on biological specimens.

Values and Attitudes

It is believed that the nature and spirit of science itself is to be one of the threads upon which content criteria for teachers should be tied. To communicate the spirit of science and to develop people's capacity to use its values should therefore be among the principal goals of education in our own and every other country. The values upon which science is based are guidelines for belief and hence for action. The values which underlie science as stated by Educational Policies Commission of the NEA and the AASA are:

1. Longing to know and to understand
2. Questioning of all things
3. Search for data and then meaning
4. Demand for verification
5. Respect for logic
6. Consideration of premises
7. Consideration of consequences

Instead of insisting on man's acceptance of certain values favored by men or groups allegedly wiser than he, the spirit of science insists that he make up his own mind. The values of science are one of the most complete expressions of one of the deepest human values--the belief in human dignity.

By their very nature these values cannot be acquired through indoctrination, for indoctrination is contradictory to each of them. Therefore, they are part and parcel of any true education. In fact, they are not only implicit in what is commonly called science but, more basically, of rational thought. The development of people whose approach to life as a whole is rational and thoughtful is advocated.

Within the area of knowledge falls the processes of scientific inquiry. These have been identified by the AAAS commission on science education.

1. Observing
2. Classifying
3. Using space/time relationships
4. Using numbers
5. Measuring
6. Communicating
7. Predicting
8. Inferring
9. Formulating hypotheses
10. Controlling variables
11. Interpreting data
12. Defining operationally
13. Experimenting

Other major items in the process of science as identified by the NSTA in Theory Into Action are:

1. Science proceeds on the assumption, based on centuries of experience, that the universe is not capricious.

2. Scientific knowledge is based on observations of samples of matter that are accessible to public investigation in contrast to purely private inspection.

3. Science proceeds in a piecemeal manner, even though it also aims at achieving a systematic and comprehensive understanding of various sectors or aspects of nature.

4. Science is not, and will probably never be, a finished enterprise, and there remains very much to be discovered about how things in the universe behave and how they are interrelated.

5. Measurement is an important feature of most branches of modern science because the formulation as well as the establishment of laws are facilitated through the development of quantitative distinctions.

Skills

It would seem that the most important task in training teachers and supervisors to teach science is to instill them with the spirit of science and scientific inquiry. It is not possible to provide all the scientific content that is available. However, if the joy and excitement of science can be shown to these candidates, then it is possible that they will be able to transmit those reactions to their students given certain generalizabele teaching skills.

There are certain skills which are important in science. These are categorized as:

1. instrument skills: e.g. using measurement tools such as calipers, balances, graduated cylinder.
2. general techniques: e.g. bending glass, sawing wood.
3. graphic skills: e.g. preparing overhead visuals, etc.
4. emergency skills: e.g. first-aid measures.

Competence in these skills will certainly add to the teacher's ability to make science live for his students.

Levels of Achievement

In a differentiated staff, some persons will be expected to have a greater grasp of certain aspects of science content than others. Two levels, I & II, have been designated. The elementary school generalist teachers would be expected to have competences in level I. Specialists, supervisors, coordinators or those involved in curriculum writing, development or reform would be expected to attain those competencies noted in level II as well as those in level I. It should be noted specifically that two levels are not designated in the area of values and attitudes since we are assuming that one will not develop a value or attitude toward science in levels.

MATHEMATICS

The emerging programs in mathematics for grades K-8 have involved considerable changes from programs of a more traditional nature. All too often in the past mathematics was presented as a series of seemingly unrelated facts and processes to be memorized. There has been a change in emphasis from learning via rote drill and memorization to developing an understanding of the basic structure of mathematics via direct involvement in meaningful activities. These activities give students an opportunity to develop a visceral understanding and/or non-verbal awareness of the why of the concept under consideration before he is asked to conquer through memory, drill, or otherwise, the how of the process being studied.

Programs which embrace the teaching of mathematics from this viewpoint encourage the students to think for himself and to realize that most problems can be solved in a variety of ways. These programs plant early the seeds for understanding of the basic concepts of mathematics. As the student gains in understanding and becomes more mature in his thinking, these concepts are continually re-explored in greater depth and breadth.

The teacher as well as the curriculum itself must be flexible enough to enable each student, whatever his level of ability, to achieve maximum growth and development based on his desire and potential to learn.

The student in such a program learns by doing, by investigating patterns, by 'discovering' for himself when possible, and by being caught up in the excitement of 'discoveries' by his peers. In essence, the program described presents mathematics as a vital, ever-expanding aesthetic experience which fosters the development of student imagination and creativity.

A sc[illegible] education whose concern is the preparation of teachers to implement or perpetuate this type of curriculum must itself be committed to a program which emulates the objectives of the former. The program would enable the teacher to understand the language, concepts, and structure of mathematics necessary to effectively handle the existing curriculum and be able to cope with changes which must occur as the curriculum evolves to keep abreast of the needs and demands of an increasingly complex society. It must also enable him to develop a sufficiently sound pedagogical technique and practical applications from which to generate interesting and relevant experiences for students. Finally, the program must develop in the teacher the competence, confidence, and creativity in mathematics education which will enable him to become an effective change agent in the public school environment.

The mathematics content necessary to be mastered by the teacher will vary according to his certification objectives and interests. The person selecting to be an elementary generalist, who teaches several different subject areas, would have to demonstrate proficiency of a minimum level in specific subtopics from the following list of content areas. A teacher wishing to become a mathematics specialist, whose primary responsibility would be to teach mathematics, accordingly would have to demonstrate a much higher level of understanding in the area of mathematics than the generalist. The topics to be mastered by a generalist might vary according to the grade level at which he intends to teach.

As an example of the differentiated criteria for the generalist and the specialist consider the following. The generalist might be expected to have a working knowledge of non-decimal place value systems of numeration and the ability to generate within any of the systems the basic facts of addition and subtraction. He might also be required to demonstrate proficiency in translating from any one system to the decimal system. The specialist, however, might be required not only to demonstrate mastery of the former material but also be able to generate in non-decimal systems of numeration such items as even numbers, algorisms for computation of the basic operations, and so on.

The mathematical content recommended to be assimilated by the teacher can be categorized in several ways, but in essence would include content from the following general areas of concentration in addition to other areas as yet to be identified.

A. Numbers, operations, mathematical systems
B. Sets, conditions, and variables
C. Ordered pairs
D. Problem solving
E. Measurement
F. Geometry
G. Numeration
H. Computation
I. Number theory
J. Probability and statistics
K. Application
L. Logic
M. Vectors

Appendix I illustrates how these indicated major areas could be partitioned into micro subtopics.

For each of the subtopics considered as a integral part of this program, the teacher would be asked to demonstrate at the appropriate level of proficiency, four types of competence ranging in tone from knowledge and understanding of the subtopic to an actual application of it to the classroom. The four types of competence are:

1. PROFICIENCY: The ability to perform correctly the computational skills and the application of algorisms, and the ability to solve problems appropriate to the elementary school.

2. PROCESS: The ability to understand the mathematical principles and structures which are needed to carry out the processes involved.

3. DIAGNOSIS: The ability to diagnose the student's level of development.

4. SELECTION: The ability to select pedagogically sound techniques and materials to satisfy skills needs.

In writing examples of performance criteria, as illustrated in Appendix I, a single subtopic was chosen at random from each of the thirteen areas. For each of these subtopics, four performance criteria have been developed relating to the four types of competence.

Since each teacher will come to the program with a unique background and level of understanding of mathematics and mathematics education, it is essential that the program be constructed in such a way that he is free to identify and satisfy the recommended performance criteria in the order and manner most relevant to his needs and objectives. To accomplish this end, a wide variety of instructional alternatives have been suggested including programmed instruction, audio tapes, videotapes, visuals, microteaching, small group discussion, formal courses, textbooks, observation of master teachers, and so on. Finally, since diagnosis and evaluation are such an integral part of effective teaching, the teacher himself would serve along with members of the mathematics staff on several evaluation committees to judge the competency of other teachers at the subtopic level.

FOREIGN LANGUAGES IN THE ELEMENTARY SCHOOLS (FLES)

Linguistic, psychological, and human behavioral research suggests that we introduce foreign languages in the elementary school and maintain the foreign language coninuum through the middle school and the high school. Many schools have arbitrarily selected the third grade as the level at which to begin the teaching of foreign languages. One point in their rationale has been that pupils have too many adjustments to make in their transition from the home to the formal school setting grades K-2.

Programs have ranged from packaged foreign language programs that make use of multi-media material like texts, workbooks, filmstrips, slides, films, props, tape recordings, records, flashcards, and transparencies, to no materials at all other than those created by a foreign language specialist who perhaps carries a bag of tricks which he uses as he travels from school to school. Open-circuit television from an educational station that presents a complete course in a target language is received by many schools at a specific time. More fortunate school districts have been able to control the time element (administratively) through the use of closed-circuit television at each school district.

The problems that are identifiable at this juncture of FLES are the following:

A. Poor preparation of teachers and follow-up of instruction. Consequently, the learning continuum has suffered.

B. Learning levels have been defined in terms of time rather than on the basis of performance criteria (level of proficiency to understand, speak, read, and write a foreign language.)

C. Few institutions of higher learning, to the writer's knowledge, have trained elementary foreign language teachers. Among those that have FLES teacher training programs are Purdue University and Ohio State University. A number of colleges have FLES methods courses. But, by and large, teachers of foreign languages in the elementary schools have been trained to teach at the secondary level or are elementary "jacks of all trades" with weak subject matter competency in the target language they are required to teach, particularly in understanding and speaking the foreign language.

D. It seems to have been decided arbitrarily in some elementary programs that students are only capable of understanding and speaking the foreign language. Whether a student was ready to read and write in the target

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language was immaterial and irrelevant; he was forced to limit himself to understanding and speaking the target language. This complete disregard for learning readiness on the basis of interest of the student left a thirst that eventually helped to destroy any motivation to learn, understand, and to speak a foreign language.

E. Technology that could have been used to speed up the learning process was considered too advanced and complicated for the elementary student. The electronic classroom, for example, has been virtually ignored. It could be used to aid the foreign language specialist in the modeling and reptition that are required and free him to concentrate on his role as a facilitator of learning, in order to individualize instruction.

F. The four fundamental foreign language skills (understanding, speaking, reading, and writing) have been taught to typical classes of thirty students by one teacher live, on film or through television. No thought has been given to finding out what foreign language skills might be better learned and practiced in a large group, a small group, through independent study, or a combination of these.

G. The foreign language teacher has rarely been studied, either by use of live models, microteaching, film or video tape. This places us in the position of not knowing what skill a particular foreign language teacher can teach best. We have no idea what foreign language teacher would be most successful in a small group, a large group, or as a resource person in guiding independent study.

H. FLES has been preoccupied with materials. In most cases this has led a student through only one set of materials, rather than setting up behavioral objectives to be met by the students, with suggested alternatives for reaching those objectives according to the individual needs and interests of the students.

The future of FLES

If FLES is to survive, the need is for the preparation of elementary foreign language teachers who will pioneer in setting up new FLES programs in schools throughout the nation. These new teachers will need to have the initiative and flexibility to try such educational innovations as the following: individualized instruction, non-graded flexible scheduling, a differentiated teaching staff, a performance curriculum, a resource center, an open laboratory, development of technology, school building flexibility, a microteaching clinic, small group and large group instruction, and perhaps most important, innovations that that have not been dreamed of yet.

The American Council on the Teaching of Foreign Languages is presently studying "successful FLES programs" in the country in an attempt to determine what made them successful and to make generalizations or guidelines that might lead to success in new programs. This is a beginning, but it isn't enough. We still must decide what it is we want the students to be able to do with the foreign language, what skills they must be able to perform, under what conditions and to what extent. What alternate routes are available to the teachers in facilitating the students' learning and in helping students in their own independent studies must also be determined.

We can no longer afford the waste of training an elementary teacher in all subject areas, hoping that he may decide to minor in a foreign language and upon graduation be labelled a FLES teacher. The new FLES teacher will major in a foreign language and his training will reflect his specific interest and needs while preparing him as a specialist in writing, teaching, and evaluating continually a performance curriculum in his foreign language. The background necessary in understanding and interpreting the target language and culture to which he will commit a lifetime will require each teacher to explore not only the literature of the target language and the culture, as is done too frequently in training foreign language teachers, but also linguistics, curriculum development, and alternate methods and techniques of teaching FLES. Familiarity with psychology sociology, anthropology, history, current problems, technology, economics, politics, government, human behaviors, art, music, sports, mass media, science, education, research, and statistics as related to the target language and culture is also advised. There must be alternate routes available to the perspective FLES teacher in reaching these goals. We should be able to say that a FLES teacher can perform this task in a particular FLES program, but never will the education of a FLES teacher be complete nor should a FLES program be frozen.

Flexibility and adaptability will be the key concepts in the perpetual improvement of both teacher and program. It is with these thoughts in mind that the FLES teacher will pursue subject matter competency, presentation competency, and professional decision-making competency. There will be at least two or three training protocols available to the perspective FLES teachers in attaining reasonable and acceptable competency in subject matter, presentation, and professional decision-making. There are presently standardized tests from the Cooperative Testing Bureau of New Jersey that can help us in setting some guidelines as to the degree of competency desired of a perspective teacher in the target language (listening, speaking, reading, writing, history, culture, linguistics, and professional preparation) as part of the subject matter competency. Nelson Brooks has published additional guidelines in further developing and refining what we loosely call culture in the March issue of Annals, 1968, a journal devoted to the teaching of foreign languages. This journal, published by the American Council on the Teaching of Foreign Languages, also supplied us with a selective bibliography 1920-1964 on the different aspects of teaching foreign languages in the May issue, 1968. The updating of the bibliography with each issue of Annals will be a prime source for readings as another part of the subject matter competency. The research done by Dr. Gertrude Moskowitz, Temple University and by Orrin Nearhoof, Department of Public Instruction, State of Iowa, in interaction analysis for the foreign language teacher might well fit into the presentation competency as a self-evaluation tool in a microteaching situation that would make use of video tape. An article appeared in the March issue of Annals, 1968, describing Dr. Moskowitz's research in the training of prospective foreign language teachers in interaction analysis.

Subject Matter Competency

The primary competency that prospective elementary foreign language teachers must master and demonstrate is the ability to communicate (understand and speak) fluently in the target language of their choosing. To achieve this competency the following would be provided to those entering freshman at the University of Massachusetts (UMass): quarters in a foreign language house on campus where native speakers would be available for informal practice in communication in the target foreign languages; shortwave radios in every room and satellite T.V. sets to tune in target countries; appropriate instructional modes which include programmed and computer-assisted instruction, video tape presentation, independent study (closed-circuit T.V., dial access-system, open laboratory, resource center and library), formal course work (visual-audio-lingual-approach, making use of an electronic classroom for a multi-media approach), seminar (use of native speakers in a more formal atmosphere), and travel. An exchange program could be worked out with the students wishing to come to UMass from the target countries. Groups of students could be flown to the target countries for special sessions not limited necessarily by time. The main idea would be to immerse the student in the language and the culture of the target people.

Presentation Competency

Once the student has demonstrated subject matter competency, the second step is to combine the content knowledge of the target language with the mastery and demonstration of the performance criteria for the elementary foreign language teacher (see Performance Criteria for the Foreign Language Teacher, Politzer, Stanford University). This will necessitate continual refinement in an attempt to adapt the criteria to the elementary level. Instructional modes would include microteaching, classroom observation (live and video taped that need to be developed), independent study, use of classroom, and simulation materials.

Professional Decision-Making Competency

The human relations skills that are now added to the behavioral skills and content knowledge that the student possesses will enable the student to become a better professional decision-maker as an elementary foreign language teacher. The role of the elementary foreign language teacher at this phase of the training program is that of a master artist who is able to draw from a number of alternatives in order to meet the instructional objectives. Appropriate instructional modes include the following: Student teaching, classroom observation (live and video tapes), microteaching (utilizing interaction analysis), small group work, use of classroom and simulation materials.

Training Models for the Prospective FLES Teacher

The most significant aspect of the training program is that it will not be time bound. It will be custom-built for each prospective elementary foreign language tacher. It will be the responsibility of the prospective FLES teacher to follow that route which will help him meet the performance criteria set up to demonstrate his competency in the subject matter. The following three models are only sample guidelines which may or may not fit the needs of a particular individual. Other more individually tailored models will evolve as each participant prepares to demonstrate the competencies required. These as yet unspecified models will offer additional alternatives and combinations of alternatives in reaching the competencies required. By the very nature of the program, all of the training models for all of the competencies may never be used as outlined. Only time and research will be able to tell us.

Model A: FLES Teacher Training Program

(a) A standardized test is administered to check the listening, speaking, reading, writing, history, culture, linguistic, and professional preparation proficiencies of the student.

(b) The student level of proficiency is such that he is ready to go on to the presentation competency.

(c) The student demonstrates mastery of the performance criteria in microteaching situations. He is then given the opportunity to demonstrate his professional decision-making competency through micro-class situations or in the elementary laboratory school as a teacher trainee or in a team teaching situation.

(d) Student satisfactorily demonstrates his professional decision-making competency and is consequently certified as a FLES teacher.

(e) Teacher continues professional growth by continual self-evaluation of teaching, action research, course work, and travel in an effort to become a FLES specialist.

(f) Teacher demonstrates expertise as a FLES specialist and is given special assignments in curriculum development and foreign language supervision, still continuing as a FLES teacher and maintaining program and teacher research.

Model B: FLES Teacher Training Program

(a) Through a series of interviews the student's proficiencies as listed in "Model A" are checked.

(b) The student then takes a standardized test on listening and speaking, two weaknesses revealed in the interview.

(c) Since the student's proficiency in listening and speaking is not satisfactory, he takes remedial or additional course work.

(d) The student's course work reveals no significant improvement in his listening and speaking proficiency, so he is assigned a foreign language aide (native speaker from the target country) to work with him formally, and independent study through computer assisted or programmed instruction.

(e) The student now shows satisfactory proficiency in listening and speaking and moves on to step (b) of "Model A".

Model C: FLES Teacher Training Program

(a) The student has never had exposure to the target language or culture he wishes to teach so he is flown to the target country where he will have the oppotunity to immerse himself in the language and the culture.

(b) The student, having become fluent in the target language, is flown back to UMass to pick up with "Model A" or "Model B".

As can be seen by these three training possibilities, it would be useless to try to outline all such plans because the training model could be different for every individual. There will be behavioral objectives to be met in demonstrating the subject matter competency, the presentation competency, and the professional decision-making competency. This, then, is the task at hand. It is a never ending task which will require continual refinement to meet the needs of our chaing world of foreign language education. It is the sincere hope and aspiration of the program to involve as many foreign language teacher educators as possible from all levels of teaching in ways and means of making this dream a reality. Ideas from educators in other disciplines are welcomed in order to maintain our thoughts in an interdisciplinary prospective. Writers, consultants, editors, and publishers of foreign language materials are also encouraged to contribute their ideas. The remainder of this report then concerns itself with subject matter competency. Other task forces are developing the presentation competency and the professional decision-making competency in a general fashion as they will apply to all candidates in all subject matter areas in the preparation and training of elementary specialists. The following then applies only and specifically to the FLES specialist.

Performance Criteria for the FLES Teacher in Subject Matter Competency

This program is divided into seven areas of competence: listening, speaking, reading, writing, linguistics, culture, and professionalism. These seven areas are modeled from those stated by the Modern Language Association (MLA) in 1955 and implemented by the MLA-Educational Testing Service Foreign Language Proficiency Tests for Teachers and Advanced Students. A candidate would have the opportunity to practice, through his choice of alternate training protocols, proficiency in each of the seven areas. The seven areas of competence have their specific and respective performance criteria set up in a hierarchy of levels that the candidate would follow in his preparation as a FLES specialist. The following outline will show the program as a whole in order to give the candidate an overall picture of the seven areas of competence in their hierarchical form and how they differ. This will be a detailed outline in each area of competence which will list the area and the hierarchy and elaborate on the specifics.

PRE-SCHOOL

The traditional purposes of pre-school education, mainly social, are currently under question. We propose that the purpose of pre-school education is to capitalize on the growth conditions of children in their early years.

The pre-school is the beginning of formal education, rather than any kind of preparation. We propose an open examination of the issues involved in pre-school education and a dynamic research-questioning, exciting program of pre-school teacher education.

The performance criteria for pre-school teachers consists of five broad areas:

1. Curriculum. Cognitive enrichment in a loosely structured environment is possible and necessary in the pre-school. The teaching of concepts rather than facts and details has long been recognized and utilized in elementary education, and as Bruner describes in his "spiral curriculum", should not be neglected in early childhood education. Inductive teaching and discovery techniques have a place in the pre-school.

2. Personal-social. Pre-school teachers must address themselves to the development of human potential. Pre-school children and teachers must be sensitive to themselves, their peers and each other. Love, understanding and empathy should be a meaningful part of the pre-school. A developing awareness of the self is crucial to the pre-school child. Our acceptance of the view that children basically fear failure and are intolerant of ambiguity must be reassessed and new approaches must be developed especially in terms of the culturally deprived children.

3. Practical Experiences. The pre-school teacher should experience actual encounters with children and environments to provide sub-cultural awareness. The pre-school teacher must learn to recognize the needs of children from a variety of subcultures, environments and ethnic back-grounds. First hand experience with such children in their environments is crucial to as thorough an understanding as can be provided in a college setting.

4. Critical Period. The pre-school teacher helps develop cognitive and affective skills. The teacher provides an environment, activities and atmosphere in which each child develops according to his capacity. Therefore, the pre-school teacher must be aware of what the children are preparing for. A knowledge of the curriculum of the elementary school is essential to be able to provide the cognitive tool training in the pre-school years.

5. Understanding the Child. A complete knowledge of child dvelopment in the physiological, psychological, sociological, and perceptual areas is paramount.

It is recommended that the School of Education have two allied facilities:

1. A multi-disciplined child study clinic providing medical, educational, psychological, psychiatric and sociological services.
2. A large home for orphaned children of all ages which in effect will adopt children from a variety of ethnic and environmental backgrounds, e.g., inner-city ghettoes, Mexican Americans, rural deprived. This home will provide necessary opportunities for case work, etc.

A broad outline of the competencies for the prospective pre-school teacher is as follows:

I. Child Development

   A. Physiological

      1. Biology
      2. Genetics
      3. Sex

   B. Psychological

      1. Abnormal
      2. Normal
      3. Cognitive
         a) Learning theory
         b) Language development
         c) Concept development
      4. In-depth study of Piaget

   C. Sociological

      1. Environment
      2. Peer relations
      3. Adulthood
         a) Social roles
         b) Parents
      4. Play
         a) Problem-solving aspects
         b) Learning process
         c) Therapy
         d) Understanding

D. Perceptual

  1. Cognitive
  2. Visual
  3. Auditory
  4. Motor

II. Pre-School Components

  A. Cognitive

  B. Affective

  C. Psycho-motor

  D. Psycho-linguistic

III. Pedagogical Techniques

  A. Use of media and technology

  B. Use of auxiliary personnel

  C. Evaluation (intelligence and other measures)

  D. Parents and adults

  E. Environment

EVALUATION SKILLS

The evaluation skills program was designed to compensate for the inadequacy of present practices of teaching tests and measurements as the basic empirical skills in the teacher education. The conceptual framework is based upon a hierarchy designed to cover all aspects of evaluation and the elementary teacher can operate within this framework at many levels of competence, but always within sound evaluation procedures.

This skill hierarchy is designed around the different skills and activities needed to carry out evaluation of different segments of school life. The skills and activities differ in regard to purpose of evaluation and in regard to scope of the evaluation. For example, if the major purpose of evaluation was to simply identify changes of effects of a program, then the evaluator would be faced with an activity designed to compare program data to a set of previously established standards. If, however, the purpose of the evaluation sought to see which of two curriculum packets best met the needs of a group of students, then the evaluator would be faced with an activity which would compare the two program results to a relative criteria. Hence, evaluations can be placed on a continuum ranging from direct comparison to set standards (hence, description) to comparison to relative standards (hence, discrimination).

Evaluations, also, differ in regard to whether the purpose of the work is to provide problem-solving information for feedback or whether the purpose of evaluation is based upon a need to generate generalizable knowledge of program effects. Therefore, it is reasonable to say that the scope of the evaluation (including size of the program, number of variables used as criteria, difficulty of controlling outside sources, comprehensiveness of needed conclusions, and time duration) play a minor role in determining the kinds of skills needed to carry out the evaluation activity. Hence, different skills are needed to describe the contextual variables related to a school district than are needed to describe a classroom. Therefore, evaluation activities can also be placed on a continuum from small scope to large.[1] Dimensional analysis of evaluation is shown in Figure 7.

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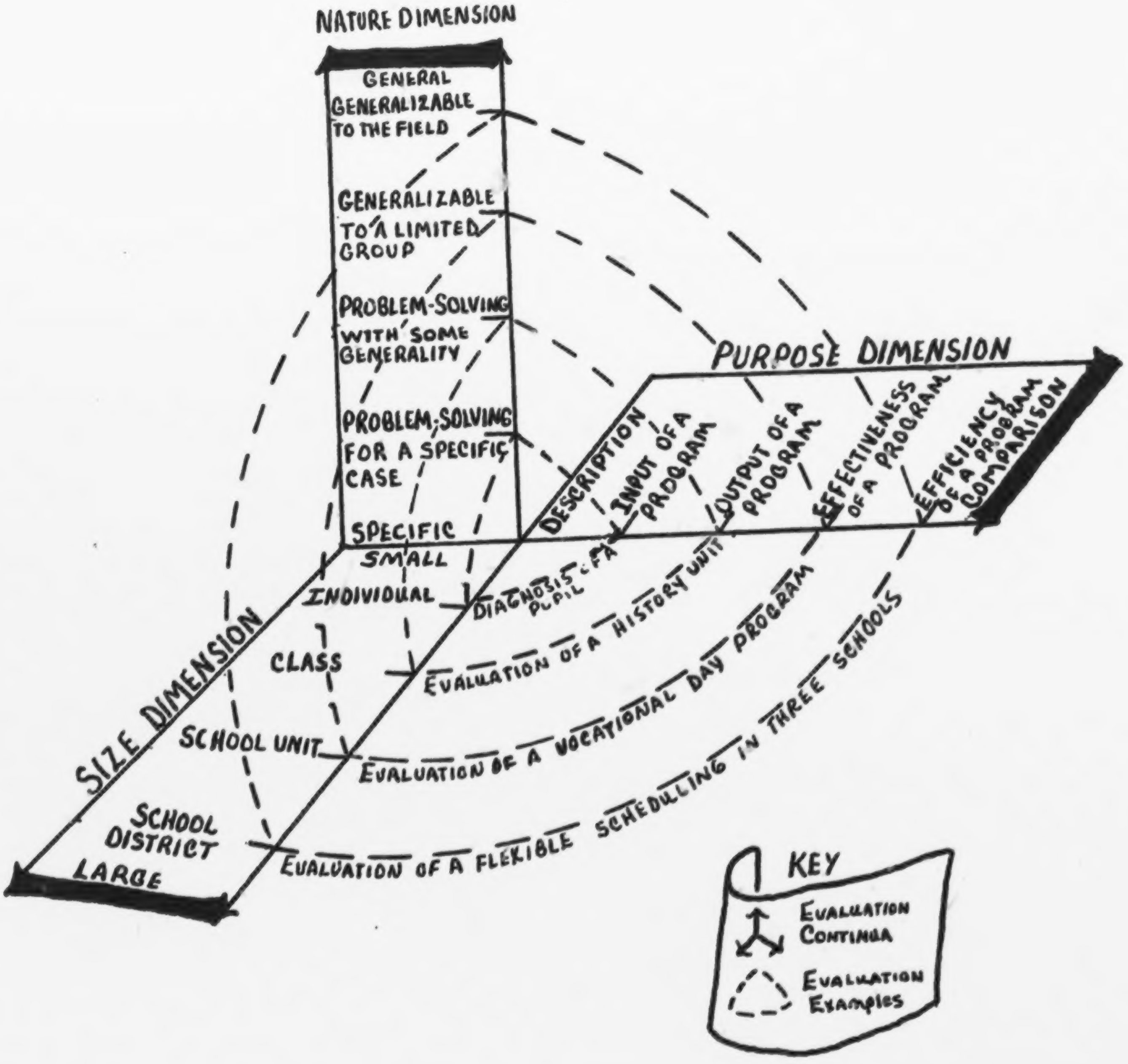
[1] In the past, teachers received their training in evaluation techniques on a piecemeal basis. Some of their training was received in courses in tests and measurements; some of their training was acquired in educational statistics and psychology courses; and other parts of their training were tacked on to methods courses. This piecemeal approach to the development of evaluation skills has, generally, been unsatisfactory. Teachers in the field are normally poor evaluators, part of which is due to the inability to synthesize the varying fragments of training into functional skills. There are often few attempts to analyze what classroom tests measure. Very seldom is there any attempt to see if the items on teacher-

Figure 7 THE FUNCTIONAL ASPECTS OF EDUCATIONAL EVALUATION


NATURE DIMENSION
GENERAL
GENERALIZABLE TO THE FIELD
GENERALIZABLE TO A LIMITED GROUP
PROBLEM-SOLVING WITH SOME GENERALITY
PROBLEM-SOLVING FOR A SPECIFIC CASE
SPECIFIC
PURPOSE DIMENSION
DESCRIPTION
INPUT OF A PROGRAM
OUTPUT OF A PROGRAM
EFFECTIVENESS OF A PROGRAM
EFFICIENCY OF A PROGRAM
COMPARISON
SIZE DIMENSION
SMALL
INDIVIDUAL
CLASS
SCHOOL UNIT
SCHOOL DISTRICT
LARGE
DIAGNOSIS OF A PUPIL
EVALUATION OF A HISTORY UNIT
EVALUATION OF A VOCATIONAL DAY PROGRAM
EVALUATION OF A FLEXIBLE SCHEDULLING IN THREE SCHOOLS
KEY
Evaluation Continua
Evaluation Examples

A similar set of procedures applies to classroom evaluation. One purpose of a teacher-made evaluation may be to see if the individual child has changed in his degree of knowledge. Evaluation here, of course, is utilized primarily as a diagnostic and teaching device. When the teacher evaluates across a group of students with a test, she is involved in discrimination and begins to set standards.

Thus, evaluation skills are considered to be a common set of techniques utilized by both elementary teachers and computer specialists, by guidance counselors and by test designers. The evaluation plan presented here is based on the assumption that the basic processes of evaluation are common to all, but the expertise required for varying levels of evaluation is vastly different. If elementary teachers can be made to view their role in evaluation as junior technicians, they will perhaps for the first time, begin to be able to communicate with behavioral scientists. The task is an ambitious one...it is based on the belief that a well designed set of performance criteria can lead to a teacher who is an expert evaluator who can use evaluation in a wide variety of ways and communicate with the public and the field of professional educations.[2]

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made tests communicate clearly. Usually evaluation procedures for instructional programs only take place at the end of the program, too late to become part of the decision-making feedback process which should be an integral part of evaluation. Too often single-measures processing low fidelity to terminal behaviors (because paper and pencil tests seem to be the easiest route to criteria evaluation) are used and contextual variables are often ignored.

Confusion in regard to purposes and usefulness of evaluation has developed suspicion and doubt of ability to evaluate programs functionally. Time commitments of teachers limit the degree in which they can spend enough time to evaluate their efforts adequately. The difficulty of assigning causal relations to variables and of identifying cost factors of programs have left program decisions for revision and selection in the realm of mysticism.

[2] A model for evaluation based on the size of the evaluation (small/large), the general nature of the evaluation (descriptive of a single situation or generalizable), and purpose (descriptive or comparative) is presented here in detail. It is believed that this paradigm represents a process model of evaluation which will make the commonality of all evaluation more apparent. Further, performance criteria are organized in such a manner that one can view evaluation as a totality and determine varying types of competencies already possessed or required in the future for teacher trainees and specialists.

In order to improve the training of persons responsible for the evaluation of educational programs, a decision was made to devise and develop a criteria-based curriculum on evaluation skills rather than on tests and measurements. Support for this decision can be found in the following review of current thinking in the field of educational evaluation.

Summary of Current Evaluation Movements:

Curriculum revisions, new designs in teacher education, and other innovative programs bear mute evidence of the search to improve education. Inherent in these attempts is the assumption that the status of the education system is known and that these attempts have been focused upon empirically identified inadequacies. These attempts to improve instruction and instructional processes, however, have served to spotlight evaluation weaknesses and threaten to reduce educational improvement to trial and error. Without the ability to diagnose student capabilities and needs, without the ability to measure and describe program outcomes, without the ability to compare alternative programs, there exists little basis for directed improvement. In "Learning for Mastery" Bloom (1968) posits:

> There is little question that the schools now do provide experience for some students--perhaps as high as one-third of the students. If the schools are to provide successful and satisfying learning experiences for at least 90 per cent of the students, major changes must take place in the attitudes of students, teachers, and administrators; changes must also take place in teaching strategies and in the role of evaluation.

The needed changes in evaluation perceived by Bloom have been adequately pointed out and described by Guba (1968) and by Stufflebeam (1968). In order that evaluation serve better the needs of education, the nature of evaluation must become more active in the process of change. Evaluation must become an important activity in decision-making. Feedback for curriculum revision should come from evaluation. Curriculum choices should be based upon data generated for evaluation. Hence, the evaluation needs of the education system are more than the limited tests and measurement skills offered to teachers. Evaluation must become more than the quickly gathered "after-the-fact" data selected to justify a program. Evaluation must become descriptive, active, and better utilized in the schools.

In the training of personnel to carry out evaluation in today's schools, the emerging role of evaluation must take precedence. No longer can education rely on the indirect method of training evaluators through the development of measurement skills. In the early 1930's, tests and measurement were adequate as a beginning of educational evaluation. Lord, however, recognized that tests and measurements were only part of the skills needed in evaluation and that evaluation was a much broader concept. (Pace, 1968). Since teachers tend not to utilize the tests and measurement skills usually taught in teacher education programs, evaluation skills with easily recognized relevance may become the route through which educational evaluation can become more useful and be improved.

Teachers tend to be over burdened with knowledge to be gained and skills to be acquired. Perhaps, evaluation skills should be part of the curriculum for only those teachers who wish them in their repertoire. Specialists and/or technicians may well be able to increase the efficiency of evaluation and to improve the quality and usefulness of evaluation in the improvement of education.

In the establishment of performance criteria in evaluation skills, care must be taken so as to include all of the skills needed to carry out the broad process called "evaluation." Cronbach (1962) defines "evaluation" as the collection and use of information to make decisions about an educational program. Stake (1967), in describing evaluation, says:

> Both description and judgment are essential--in fact, they are the two basic acts of evaluation. Any individual evaluator may attempt to refrain from judging or from collecting the judgments of others. Any individual evaluator may seek only to bring to light the worth of the program. But their evaluations are incomplete. To be fully understood, the educational program must be fully described and fully judged.

Stufflebeam (1968), working out of the Evaluation Center at Ohio State University emphasizes the role of evaluation as a tool in decision-making. His analysis breaks evaluation into four categories; context evaluation, input evaluation, process evaluation, and product evaluation. In the so-called CIPP model of evaluation, context evaluation refers to the assessment of variables that determine the school's status, that characterize the school's setting and that are related to the identification of needs and problems. Input evaluation refers to a description of the resources and components available and used in coping with the specified problems. Process evaluation is defined as feedback mechanism used to determine the effectiveness of the program and its individual components. In process evaluation, the educational program of the instructional sequence is evaluated in terms of objective, purpose, and/or a set of operating standards. The fourth breakdown of evaluation is product evaluation which includes the determination of the feasibility, quality, and efficiency of the program.

Pace (1968) of the Research and Development Center on Evaluation of UCLA prefers a categorization system of evaluation activities organized around the size of the program being evaluated. He is careful to point out that evaluation strategies and the skills needed to carry out the evaluation activities differ significantly as size of unit, scope of unit, and duration of the unit being evaluated vary. For small units (such as programmed tests, instructional methods, or instructional units) relevant evaluation can be directly related to behaviorally defined objectives, largely limited to intended effects, designed as an hypothesis testing experiment, directly criterion based, and largely unconcerned with group processes. For a medium sized unit (such as, a particular curriculum, a single school, or a single grade) relevant evaluation should not be limited to explicitly defined program objectives, include a range of potential outcomes and interactions, sometimes approximate an experimental mode (but controlled conditions for the duration of the program are rarely possible) and be concerned with group processes. For large units (such as a school system, a total institutional program, or higher education in the United States) relevant evaluation should never be limited to explicitly defined objectives, but should consider a broad range of educational and social consequences, never be designed as an "experiment" and be concerned with group processes only when relevant.

A summary of the major emphasis in evaluation at this time might reveal the following points:

1. There is a need for evaluation to become more descriptive of what is going on in the schools. This information as to what is must be fed back into the system to produce further change (which in turn requires further evaluation). We can no longer view evaluation as completed when the final report is written.

2. Tests and measurements no longer describe evaluation. There is need to train teachers and evaluators in new procedures of evaluation to improve the quality and usefulness of evaluation.

3. Evaluation is a tool in decision-making. It describes what is going on. The decision as to what steps to make after the evaluation are often humanistic, existential decisions; but, evaluation makes it possible to define the effectiveness of these decisions.

4. The broad movement of new thinking in educational research appears to be moving toward a process view of evaluation in which evaluation never ends, but is on-going. This process view is meaningful to the conduct of classrooms and may provide an effective link for the first time between educational researchers and classroom teachers.

5. The procedures and techniques of evaluation will vary as the scope and size of the evaluation changes. The larger the system, the more a "process" approach to evaluation may be required.

Organization of the Curriculum:

Certainly everyone concerned with education could not qualify in terms of time or ability to become top-level, professional evaluators. Nor should everyone. The need exists in schools for personnel trained at several levels of evaluation skills. Skills can be categorized into several viable ways. For instance: (1) a skill hierarchy can be devised along the current conventional lines of test and measurements, research design, etc. (however, this system has failed to train evaluators adequately for their needed roles); (2) a skill-hierarchy can be devised by the difficulty of the content (but, such a system would lack the completeness of competence to carry out many of the functions required of evaluators); (3) a skill-hierarchy can be devised along types of evaluation (however, again there would be limited utility of personnel in that too much specialization might occur); and (4) a skill-hierarchy can be devised along the functional aspects of evaluation (that is, evaluation skills would be broken down into component categories based upon the size, scope, duration, and purpose of the evaluation).

It is the fourth approach to evaluation - a skill hierarchy that is presented here. Hence, differentiation of evaluation skills can be organized along both horizontal and vertical dimensions. The vertical dimensions would range along a continuum from the novice evaluator (who might be a classroom teacher or administrator desiring only knowledge of the language and fundamental principles of evaluation); to the evaluation technician (who could be located in a school setting to consult with teachers in evaluating classroom practice and in test design, to collect and organize data for large-scale or district wide evaluations and to carry out parochial, problem-solving evaluations on a small scale basis); and finally to the evaluation specialist (who is placed at an administrative level to add professional competence to district-wide evaluations, to direct and lead the professional growth and work of the lower echelon evaluation personnel, to pursue the further development of evaluation methodology, and to make decisions concerning quality-control of education within the district).

The horizontal component can well be arranged on a continuum composed of a simplified division of evaluation taken from the functional analysis of evaluations. This continuum would range from evaluations designed to ascertain effects of a program according to a set of standards (this segment of the continuum might range from evaluation of specific objectives, to evaluation of by-products and unintended effects of a specific program), to evaluation designed to compare program effects (this segment would range from the relative effects of different programs to the comparative effects of a total school effort).

MEDIA

The lot of the media specialist in the traditional school system has not been a happy one. In the schools, there usually was no such thing as a media specialist. He was called the A-V Man: usually a technician capable of running the equipment and making minor repairs. He was sometimes called upon by desperate teachers who needed a film to show during an unplanned hour, but more often he was not called upon at all. An aura of mystery seemed to hover over the A-V room, and teachers seldom ventured there. The teachers often did not know what equipment and processes were at the disposal of the A-V man, and their employment of A-V aids was minimal.

Because the A-V man was often not a credentialed teacher, he enjoyed a status somewhat lower than the faculty member, and somewhat higher than the custodian. He was on the periphery of the staff, and was usually called upon, if at all, after the planning was done and the decisions made. His contribution to curriculum planning, for instance, was to fill in the gaps in instructional time left by the planners.

The technical skill of the A-V man ranged from a thorough understanding of electronics, to the ability to use a Brownie camera. He was sometimes an unpromising teacher promoted out of the world of students and into the world of gadgetry. It is, therefore, difficult to speak of the role of the media specialist in the past, as they seldom were media specialists, and they had no defined role.

Nor was much attention given the media specialist by the teacher education programs. While schools of education did offer courses in the advanced uses of media, these were aimed at the experienced teacher, and it was a rare school that had a special program aimed at the development of student teachers into media specialists. More often than not, media training in a teacher education program consisted of one required course in A-V aids or the demonstration of the ability to operate a limited number of pieces of equipment.

The technological and artistic developments in the field of media in recent years have made such an approach to media education unconscionable. Because of the vastness of the field, we can no longer expect all teachers to become acquainted with the techniques and tools of media. Nor can we continue in the haphazard approach to the selection and training of the media specialist.

In a teacher education program emphasizing differentiated staff and performance criteria, provision must be made for a more specific program of development for the media specialist. In a differentiated staff, the media specialist would operate in four main areas: (1) as a teacher, (2) as a curriculum advisor, (3) as a technician, and (4) as a media purchaser and cataloger.

Figure #8 indicates the diversity of the media specialist's role. He is a teacher, and his course in media is included in the curriculum. He is also expected to instruct the other members of the faculty in the use of media. He is responsible for the training and maintaining of a student crew capable of operating the equipment and producing media aids.

The media specialist is a curriculum advisor. This means that instead of being called upon after the curriculum has been planned to fill in the gaps, he is present at the first stages of the planning, advising how courses may be constructed around media to maximize their effectiveness. At this stage he is a resource person, making recommendations at the early planning stages.

Third, he is a technician capable of operating and maintaining all media equipment owned by the school. Technically and artistically he is adept in the production of media aids for both his own classes and those of the other faculty.

The last aspect of his role is that of media purchaser and cataloger. He is something of a librarian, keeping himself advised of recent developments, ordering and filing media aids and equipment, and disseminating information about his library to the other members of his faculty.

This is the role of the media specialist in the differentiated staff. There are several obvious assumptions about the inservice employment of the media specialist. These assumptions include adequate space for work and storage, adequate time during the school day to function in his various roles, adequate supporting staff, and adequate budget allowances.

This definition of role and these assumptions, necessitates a very different preparation for the media specialist than was provided in the past. Because the media specialist will be a teacher, performance criteria for content and methods, as well as for curriculum development, will be the same as those devised for all teachers in the program, and will not be listed here. Rather, we will concentrate on the criteria for the media specialist as technician and as purchaser and cataloger.

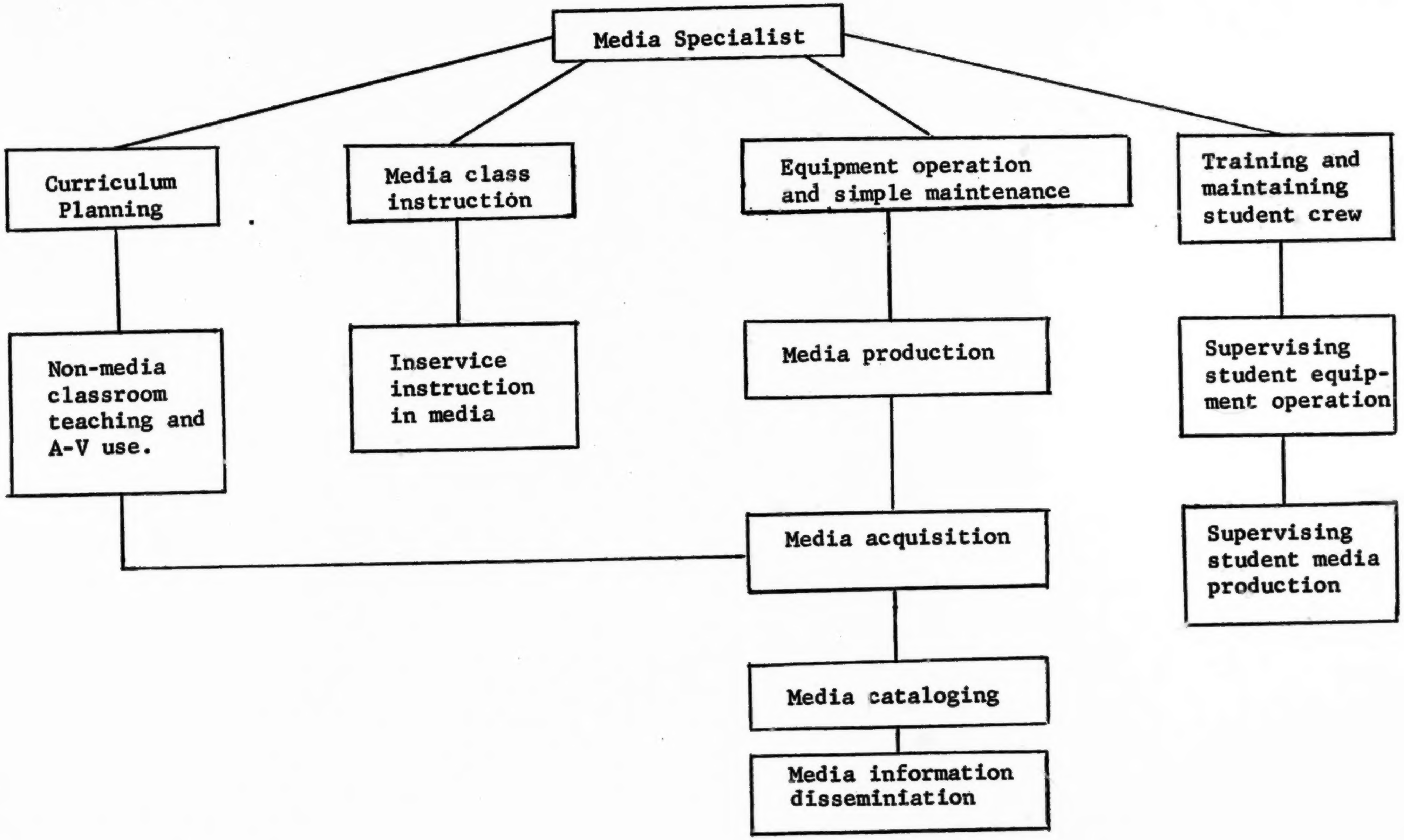
Media Specialist
Curriculum Planning
Media class instruction
Equipment operation and simple maintenance
Training and maintaining student crew
Non-media classroom teaching and A-V use.
Inservice instruction in media
Media production
Supervising student equipment operation
Media acquisition
Supervising student media production
Media cataloging
Media information dissemination

Figure #8

SUPERVISION

A major role in any teacher education program is that of the supervisor. This supervisor may be based at the university and/or at the school in which interns or student teachers are placed. In addition, most school districts have supervisory personnel who work with experienced teachers, as well as student teachers, for the purpose of improving instruction. Despite the acknowledgement of most universities and school districts regarding the importance of the supervisor's role in improving instruction, there is little uniformity regarding the methods or the criteria by which supervisors are selected. Generally, the skills required of supervisors are left unstated. The background of a "successful" teaching career is often assumed adequate training for supervisory duties.

It is our belief that being a "successful" teacher is not sufficient qualification for being a "successful" supervisor. A supervisor should be an excellent teacher, but he also needs other kinds of skills and techniques than those required of a "successful" teacher. For example, he has to be skilled in counseling techniques, the use of different supervisory strategies to bring about desired behavior change, and knowledgeable of different paradigms of teaching. Some classroom teachers have these skills, but most do not. It is essential, however, that a supervisor have them.

It is also our belief that teacher trainees should have exposure to theories and skills of supervision. These skills should not be limited to experienced teachers. Beginning teachers will be better able to help themselves and one another in becoming good teachers if they can analyze their strengths and weaknesses and suggest alternative approaches. In order to do this they should be able to function as supervisors for themselves and for their colleagues. With this belief, then, all teacher trainees will be required to meet certain criteria in the area of supervision.

In its broadest sense supervision means the improvement of instruction. Subsumed under this ultimate goal are the following subgoals:[1]

1. To set a proper classroom environment for learning.
2. To develop and utilize methods and materials which will insure the steady progress of each child.
3. To work with appropriate personnel to formulate instructional goals for the school or school system that are realistic and achievable.

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[1] James Curtin, Supervision in Today's Elementary School, New York, 1964, pp. 10-11.

4. To provide the school or school system with a clearly defined supervisory program that will insure the attainment of instructional goals.

5. To develop evaluative procedures that will appraise the effectiveness of the program.

6. To develop the attitude in the entire professional staff that supervision must be cooperative and that no teacher fulfills his professional obligation unless he works in concert with others to improve instruction.

7. To develop the attitude that instructional improvement is directly related to self-improvement of all members of the professional staff.

8. To provide specific help to teachers with day-to-day problems.

9. To develop a sound working relationship in which teachers feel secure and confident.

These subgoals can be divided into specific skills and techniques for which performance criteria can be written. These skills and techniques can be categorized as follows:

(1) Observation methods
(2) Feedback techniques
(3) Counseling techniques
(4) Knowledge of paradigms of teaching
(5) Supervisory strategies
(6) Evaluation skills

A systems approach consisting of stated objectives, procedures, and tryouts can be used in developing each program section. Live instruction, simulation, microteaching, video-taped teaching episodes, programmed instruction, 35 mm time-lapse slides and role-playing will serve as instructional procedures for the acquisition of these supervisory skills and techniques.

ADDENDUM

URBAN EDUCATION

Preface

Because of the late addition of qualified personnel to the University of Massachusetts School of Education in the area of urban education, this section has not had any specific performance criteria developed. However, because of its importance we want to outline our future plans in the area of urban education.

Introduction

At this time, most schools of education offer training programs geared to preparing teachers for middle-class, white, suburban schools. An overwhelming body of evidence, however,--ranging from impressionistic studies such as Jonathan Kozol's Death at an Early Age to scholarly studies such as Fantini and Weinstein's The Disadvantaged, to the appalling statistics of the failure of children in inner city schools--suggest that new training strategies and experiences are imperative. One of the greatest tasks today is to provide a meaningful and successful educational basis for all people to learn and perform adequately.

The School of Education proposes to provide a teacher-training program for urban education. This program will be devised to prepare prospective teachers for inner city schools which contain culturally different students. Further, the program will be geared to develop behaviors that can be evaluated not by courses taken, but by specific performance criteria designed to measure the necessary skills and knowledge for teaching in urban schools. Through this program it will be possible to produce teachers who will become aware of cross-cultural differences within the urban setting and who will relate honestly and respectfully with those differences.

The area of urban education does not stand by itself in the overall Model Elementary Teacher Education Program. A reading teacher in a culturally deprived area needs the same kinds of reading skills and knowledge as a reading teacher in a middle-class neighborhood, plus additional attitudes, skills, and knowledge. Thus, a trainee preparing to teach reading in an urban area would be required to meet most of the same performance criteria in Language Arts as any other reading teacher, but the trainee would have additional criteria to meet in the area of urban education.

The teacher-training program will focus on two particular areas: (1) developing felt-behaving knowledge about culturally different children, and (2) receiving practical experiences within the community and determing how those experiences relate to the children's learning. The anticipated result of this program will be to help prospective teachers acquire an understanding about culturally different groups and how to help apply this knowledge to the classroom more effectively.

Performance Desired

The desired performance by a prospective teacher in an inner city school has two distinct objectives: (1) to develop an ability to communicate with culturally different children, and (2) to develop an ability to relate on a personal basis with culturally different children.

Because people are products of their environments, stereotyped preconceptions about culturally different children cloud and confuse the educational aspirations for the children. Children sense these tendencies; and consequently, reflect the self-fulfilling prophecy of failure as initiated by the teacher. The children then become failures. Respect for children and confidence in their ability to perform adequately and successfully within a given framework is the basis upon which learning begins. Many teachers undergo emotional trauma when they begin teaching inner-city children because they lack that vital inter-personal relationship.

It seems quite evident that what teachers of culturally different children must do is change their attitudes associated with these children. The teacher will have to originate a new relationship between himself and the children by learning to understand the culture of the child.

Developing Appropriate Behaviors

Performance criteria for urban education will be developed in the following areas:

(1) Communicative skills. Reading is the key to academic success as the educational system exists today; yet, there is notable disparity in reading achievement for inner city children and "average" children. It is imperative that reading, as a part of the communicative skills, be developed for them. All teachers who plan to teach in inner city schools will be prepared to teach reading as well as any specific subject matter area. To make inner city teachers more effective, they will become acquainted with varied reading approaches and techniques and be able to employ the one which seems the most appropriate for their teaching situations. Appropriate performance criteria will be developed in the Language Arts area.

(2) Black studies or Afro-American History. Afro-American history can provide a sound basis to build a positive self-image for black students. Through a recognition of cultural contributions, children can acquire a sense of dignity toward themselves and other black people.

It is hoped that a study of Afro-American history will not become a typical isolated subject, taught at some point in school curriculum, but rather permeate the entire curriculum. As part of the urban education proposal, an in-depth curriculum of black studies will be included to teach prospective teachers about the kinds of materials which are available for instruction and for personal edification.

(3) Strength-Training. This is a developmental process by which a person can assess his own strengths and weaknesses when dealing with himself and his ability to control the classroom. As a positive measure, this technique can place emphasis upon learning to maintain and control the group through the use of personal and psychological impact.

Role-playing is the method used for strength development within a structured classroom situation. Trainers take on prescribed roles to acquire certain responses from the prospective teacher. Consequently, it is hoped that the trainee can use his innate strengths to overcome his perceived weakness and establish classroom control skills.

(4) Personal Encounter. These encounters will occur in an academic setting in which people, black and white, can discuss feelings about social issues which are affected by education.

Specific attention will be devoted to an understanding of cultural differences which serve as the basis of behavior for teachers and students.

(5) Local Community Participation. A ghetto school community can provide resources and guidance for a university regarding teacher training. Any successful university particpation in an inner city school needs a cooperative relationship with the total community - parents, local educational consultants, school board, etc. Therefore, a significant portion of the urban education proposal is to utilize the community as facilitators in the teacher-training program.

Community experiences will be specifically planned to promote educational goals and the prospective teachers will learn how the immediate environment effects the children's learning.

In order for a prospective inner city teacher to "know" about the area in which he will be teaching, exposure provides first-hand knowledge and experience.

(6) In-Service Training. An in-service teacher training program provided by the University of Massachusetts with the cooperation of the school community can accomplish two goals: (1) exposure to new teaching techniques for established teachers, and (2) acquisition of some "expert" knowledge about solutions to some of the educational problems of ghetto children.

Ways in which this may be done are:

(1) Use master teachers to conduct seminars and demonstrations on successful teaching techniques.

(2) Provide opportunities for teachers to become acquainted with new learning techniques. Example: a) Use task force personnel from the University in various subject areas, b) Use video tape for demonstrations.

(3) Permit children to role play as teachers and discuss some of the implications.

Summary

The above is a rough sketch of our proposed program in Urban Education. The ideas expressed will be expanded and operationalized through the development of performance criteria and alternative instructional procedures. Through this kind of program it is anticipated that a more relevant teacher-training program will be provided in order to prepare trainees for teaching in culturally different and difficult situations which exist in our large cities.

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MODEL ELEMENTARY TEACHER EDUCATION PROGRAM

APPENDIX I

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INTRODUCTION

TRANSLATION OF PERFORMANCE CRITERIA INTO OPERATIONAL SPECIFICITY

One must remember that this proposal is designed to establish a hierarchy of performance criteria through the description of program parameters and through the rendering of specific performance criterion examples. These examples, however, do not become operational until they are specified for a particular system and are installed inside a network of professional personnel, facilities, equipment, and instructional materials.

To simply describe one set of criterion measures with the degree of specificity demanded for actual operation would run a serious risk of being trivial for an atypical set of circumstances. One set of performance criteria with adequate specificity for operational utility would simply become a farce upon its second exposure to students. To properly utilize performance criteria, there must exist several sets of specific criteria measures for each generalizable performance criterion.

Hence, given one of the exemplary performance criteria, one must develop specific illustrations within the criterion parameters and within the philosophy and policy of the University. These specific manifestations of the performance criterion would provide adequate variety for the testing of several groups of students and for the retesting of students. One must remember also that the criteria illustrations as well as the criteria parameters are subject to change in accordance to empirical evaluations and social relevance. Certainly, each set of illustrations should be subject to alteration after tryout feedback, revised to function better within the system, and updated to assure that performances will continue to be based on competence development rather than "poop" sheets.

To better illustrate the process of installing performance criteria into operational forms the following example is offered.

The Performance Criterion on Conclusion Making

The trainee must identify four of five definite a priori conclusions from a simulated set of data which contains five predetermined, pertinent, and consistent conclusions.

Example 1: Information for the trainee

Setting: An elementary school district located in the center of Massachusetts has conducted several surveys to study their personnel trends and to see why class sizes continue to increase beyond the usual state increment in teacher support. Data for their last three years is given to you to make five conclusions which they desire.

Table 1: Number of Classroom Teachers

Grade	1960	1961	1962
1	12	14	15
2	11	12	14
3	11	12	13
4	10	10	11
5	8	8	8
6	6	6	7
TOTAL	58	62	68

Table 2: Class Enrollment

Grade	1960	1961	1962
1	360	423	460
2	308	335	383
3	312	341	378
4	314	321	365
5	224	283	298
6	180	198	244
TOTAL	1698	1901	2188

Rate of state increment: 1 teacher for every 30 students increase.

Table 3: Professional Personnel

1960-69

1961-74

1962-81

Table 4: **Failure Rate (Number Retained)**

Grade 1	1960	1961	1962
1	31	33	35
2	20	24	28
3	32	36	38
4	27	31	23
5	24	34	26
6	18	34	33

Table 5: **Mobility Rate (Change of Class Size)**

Grade	1961-62	1962-63
1	59	35
2	25	44
3	18	33
4	6	38
5	54	5
6	21	30

$$\text{Class ratio} \quad \frac{\text{\# student enrollment}}{\text{\# of professional personnel}}$$

1. What can be concluded about change in enrollment?
   24.6 to 25.7 to 27.0 Hence, the ratio is increasing despite state increments.

2. Is any of the change of ratio due to rate differences?
   But since the state ratio is 1 for 30, there should be some slow increase with increase in enrollment because all ratios are below the state level.

3. Is there a define change of enrollment?
   A change of student enrollment has occurred, from 1960 to 1961 enrollment showed net increase of 203 ; 1961 to 1962, 287.

4. What effects do the failure ratings have on the changes of the ratio? Does the mobility rate affect this?
   The data does not influence the ratio since the ratio does not really depend on change of enrollment but only on net enrollment. However, this data indicate the falseness of net enrollment differences. Note that the failure frequencies increased over the three years and the total mobility changes are less than the differences in net enrollment differences. Hence, more students are retained in the system.

5. What effects does the inclusion of all professional personnel have?

The ratio is to professional personnel rather than teachers so class ratio is not representative of class size. State increments were probably meant to refer to class sizes. The increase of professional personnel not classified as classroom teachers also adds to the rate of this increase in the ratio. As can be observed, there is two professional personnel that has been added but not to the teaching class. Also, 16 additions are allowable but only 10 additions have been made.

The criterion illustration would actually be one of several related to the measurement of the conclusion-making criterion. Both the setting and the data would be given to the student. The questions would be asked of the student and the students answers would be recorded and then compared to the stored set of conclusions. Deviations from this set of conclusions would be judged by experts as to the degree of correctness and suitability of the student's conclusions. A decision of pass or fail would then be made. The criterion illustration would then be placed back into the criterion evaluation subsystem until future use or up-dating. For each performance criterion in the system a similar procedure would have to be followed before installation into the system.

HUMAN RELATIONS APPENDIX

Section I. General Performance Criteria for Human Relations

The specific performance criteria in the area of human relations provides a series of developmental tasks that should be meaningful in creating personal change. Measurement of this change should take place on more than one level. The individual tasks discussed in Sections II, III, and IV. are each associated with a technique for assessing performance, but these tend to be molecular and limited to a narrow range of behavior. We have stated that it is our assumption that the completion of combinations of tasks will lead to new integrations and to overall changes in the individual. The specific performance criteria do not measure this overall change.

Two specific approaches to overall performance criteria are planned: Before and after human relations training a behavioral assessment in which a general evaluation of the skills, competencies, and knowledge of the teacher trainee will be conducted primarily from an empirical base.; and a self-concept assessment which is a broadly conceived exploration of changes in the individual's perception of self and others' perception of him. A new approach to self-concept is utilized which includes not only the traditional self-picture, but also the picture one has of how others see him (as compared with the way they actually see him).

It may be observed that this general evaluation of the individual before and after participating in human relations training represents an effort to provide a general integrating theme for all the activities of the student. Rather than merely "dropping" the student into a human relations experience at random, the behavioral assessment and the self-concept evaluation are designed to provide a structure for the student's participation in human relations and an overall evaluation of his achievements and satisfactions.

1. Behavioral Assessment

The primary performance criterion for the teacher trainee is to be defined by the trainee himself in consultation with an advisor and evaluation specialists within the human relations training team. A week long orientation program to the activities, methods, and goals of the human relations training program will be developed. The teacher trainee will enter this experience which will consist of small samples of a wide variety of the activities offered within the human relations training program. At the conclusion of the week, the trainee with consultation assistance, will determine his behavioral objectives. The general performance criterion will be the degree to which the student accomplished the objectives established.

These objectives will consist of specific performance criteria which the student wishes to achieve during his participation in the program. As the student progresses through the human relations programs he has selected, it is anticipated that he will desire to change his objectives. Through consultation with his advisor, the original general performance criterion may be modified. In some cases, constant change of objectives may be expected.

The primary purpose of establishing a general performance criterion consisting of specific activities is always to have one's behavioral objectives as clearly stated as possible. Too much of human relations training consists of randomly selected activities without any general goal.

The measurement of achievement of stated goals will, of course, be by the specific performance criteria associated with each activity. In effect, does the individual achieve the performance criteria he selected earlier. A more general evaluation on a case study basis will be conducted by both the trainee and his advisor. Each trainee will keep a diary of his progress coupled with impressions and attitudes toward the varied experiences he encounters. The advisor, on the other hand, will complete a clinical case study describing the trainee at various stages of human relations training. The criteria for measurement will be: 1) specific performance criteria selected actually completed successfully; 2) positive change in the trainee as judged by the advisor and at least one other trained individual; and 3) a general correspondence between the trainee's diary at the conclusion of human relations training and the clinical summary.

As the human relations laboratory gains experience, it is anticipated that more precise behavioral assessment will be possible. One goal will be to establish a series of behavioral tests which when coupled with traditional testing (intellective, personality, interest) will provide a picture of the individual both before and after human relations training.

2. Measurement of Self-Concept Changes

Measurement of the self concept has provided one of the more productive criteria in assessing general adjustment and behavioral change. The most extensive theoretical framework for the self-concept has been developed by Carl Rogers (1951) but Harper (1959) points out that Rogers has drawn heavily on many other theorists, including Goldstein, Angyal, Maslow, Snygg and Coombs, and Sullivan, and Rogers himself comments on his debt to Lecky and Raimy. In fact, it is difficult to evaluate any personality theory without at some time treating the system of attitudes and values held about the "self," ranging from the analytic "ego" (defined by Sherif and Cantril (1947) as "what I think of myself") through Murphy's several categories of "self," to

Cattell's (1950) use of the "structural self" to lend stability and organization to his system of factored traits.

With this centrality of the concept to so many theories, it is not surprising that many studies have used measurement of self concept as a criterion for behavioral change, particularly in psychotherapy. Raimy (1943, 1948) was the first to demonstrate changes in the self-concept as therapy progressed. He evaluated verbal behavior, tabulating affectivity of self referents and their frequency. His work was followed by that of many others, usually studying the effectiveness of "client-centered" technique.[1]

A summary of these studies shows positive change being associated with increasing use of positively toned self references and decreasing negative referents. These changes did not occur where therapy was judged to be un successful.

It should be pointed out that subjects simply taking repeated self-concept measures tend to show improvement, but that those involved in successful treatment usually show greater and more consistent changes. Changes in the self concept should provide a general, broad scale measure of personal development, and can be used as broad performance criteria to assess the overall impact of the individual developmental tasks.

More important than these studies are the studies showing that self-concept measure discriminate between normals and neurotic, psychotic or character disorder groups. Even though we are attempting to move away from such relatively meaningless classifications to behavioral descriptions of individuals, there is little question that the old classifications system did include those who were unable to adapt to or exist in a successful relationship with society. Of the many studies,[2] there is good general agreement that these measure can discriminate between normals and neurotics. Data on psychotic or character disorders vary somewhat, but this appears to be due to the fact that most studies have used only self — ideal self discrepancies or similar measures. In an extended series of studies, Miskimins has been able to differentiate between all of these groups with a very high level of success where he used all of the discrepancies that are summarized below.

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[1] Butler and Haigh (1954), Caplan (1957), Cartwright and Vogel (1960), Gordon and Cartwright (1954), Nunnally (1955), Rosenman (1955), Rudikoff (1954), Scheerer (1949), Stock (1949), Strom (1948).

[2] Altrocchi, Parsons, and Dickoff (1960), Chase (1957), Curtis (1963), Downing and Rickels (1965), Epstein (1955), Friedman (1955), Guller (1962), Havener and Isard (1962), Hillson and Worchel (1957, Ibelle (1960), Jones (1956), Kamano (1961), Laxer (1964), Leary (1957), Manasse (1965), Miskimins and Simmons (1966), Rogers, (1958), Rogers and Dymond (1954), Sarbin and Rosenberg (1955), Tamkin (1957), Wahler (1958).

The following comments are based on the work of Miskimins (1968), the most recent and thorough development in theory and measurement of the self. Four elements of the concept can be differentiated, and are important to the evaluation of the self concept structure; the self concept, the goal self concept, the perceived responses of others, and the responses of others. The self concept refers to the central identity of the person, "Who am I?" "What am I like?"

The goal self concept derives from the earlier "ideal self" of the Rogerians. It is the concept of the person as he would like to be. The use of the goal self implies real goals of the individual, not necessarily only culturally desirable or socially acceptable goals. The meaningfulness of the goal should be an individual matter.

The perceived responses of others is an aspect of the self that has not been treated frequently in the literature, although Nunnally (1955) did use a measure of the subject's perceptions of how her friends viewed her. Every person has his own impressions of how others view him. These might be expressed as "Who and what do others think I am?"

The fourth component is an indirect measure, not directly of the self concept, but important in evaluating the impressions of the self. This is the actual feelings of others about the person, their impression of who and what he is. This measure could be called the reality self, although it relates only to reality as perceived by others.

The individual who is growing and developing typically has small discrepancies among these elements of the self. He sees himself in positive ways, but has goals that are somewhat more positive.[3] He also sees others as viewing him positively, and there are minimal differences between his perception of how others see him and their actual view of what he is.

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[3] Cole, Oetting & Hinkle (1967) have pointed out that there is a range of discrepancy between the self and the ideal self measures that seems to be "normal." Either high discrepancies or lower discrepancies represent adjustment problems.

Performance Criterion: To show, in an extended discussion of personal goals, abilities, needs, and satisfactions, meaningful increases in positive self-referents and decreases in negative and ambivalent self-references.

Measurement:

An extended taped interview will be held early in the students program and near the end of the program. The interview will be penetrating and will call on the individual to assess himself and his relationship to his environment in considerable depth.[4] It will be semi-structured, covering the broad areas of: 1. fundamental abilities, 2. use of abilities in his personal environment, 3. attitudes of others in his environment toward himself, 4. personal needs, 5. ability of the environment to meet those needs, 6. satisfaction, 7. future goals, 8. relation of future goals to abilities and needs. The interviews will be evaluated on two factors, the general ability of the student to see the relationships involved and the increasing use of positive, as opposed to negative or ambivalent, self referents. A sampling procedure will be used to count self referent statements.

Performance Criterion: To show, on a standardized self-concept scale, a "healthy" pattern of self and self discrepancy measures.

Measurement:

The Miskimins Self-Goal-Other Discrepancy Scale[5] uses the semantic differential format to evaluate self concept. It will be administered several times to the student during his training. The scale will be administered to the student's fellow trainees at the same time, and they will be asked to rate the student on the same adjectives. The profile summarizes six separate discrepancies; 1. Self-culturally typical goal, 2. Self-culturally atypical goal, 3. selfovervaluing others, 4. Self-critical others, 5. Self-globally critical others, 6. Self-personal others. Additionally a general measure of the level of self-approval can be obtained, negativistic or random responding can be measured, and measures of self- and perceived responses of others can be compared with actual responses of others. The student will show a level of discrepancy on any of these measures no greater than two standard deviations from the mean.

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[4] The aspects of the interview are based on the components of a general environmental interaction model (Cole and Oetting, Technical Report XVI: Mental Health and Manpower Project. Colorado State University, Fort Collins, Colorado.)

[5] Copyright 1967, Published by Rocky Mountain Behavioral Science Institute, P. O. 2037, Fort Collines, Colorado, 80521.

Section II. Intrapersonal System Skills

Human relations is usually thought of as behaviors in relation to others. We have chosen, however, to include behaviors in relations to self (e.g. physical development, thinking, observation by self of others) as within the realm of human relations activity. Unless one views himself positively, has some degree of self-confidence and understanding, there is little likelihood of successful interpersonal functioning.

This section describes some general and specific performance criteria for effective intrapersonal fuctioning. A general performance objective for the entire series of intrapersonal skills might be stated as follows:

> Upon successful completion of an individually selected program of verbal and non-verbal self-awareness training, the teacher trainee will be more fully aware of the relationships of body to mind, of himself to others, and of himself to his environment. He will be able to integrate activities to produce self-awareness into regular classroom practice and will also be able to use these activities to make himself a more complete, comfortable, and productive person.

The measurement of this performance criterion will take the form of: 1) the overall measurement of self-concept and specific achievements mentioned in Section I. General Performance Criteria for Human Relations; 2) the ability of the teacher trainee to integrate these activities into regular classroom practice once he begins teaching. This will be measured by self-report, videotapes of classroom performance, and by measures taken of the trainee's students.

Speaking more philosophically, this section is devoted to the improvement of the relationships which the teacher trainee has both with himself and with his students. While emphasis in this section is on intrapersonal behavior, it is recognized that the individual exists primarily in relation to others. These relationships may be thought of, in the light of Martin Buber's I-Thou construct, as attempts to apprehend and accept the self (and others) as a working, changing unit. With an attitude of self-acceptance the teacher will be able to free himself to help each of his students as growing individuals. In order to bring about this extension of freedom of awareness there are two steps which we feel should be taken.

First, the trainee must be made aware of his self and the selves of his students. Here the attempt is made to have him see himself as a unity through the use of the skills of verbal, non-verbal, and integrated awareness. A similar process is described in the next sub-section to lead the trainee in the direction of accepting his students, as well as others, as unities. The skills described in this sub-section are attending behavior, flexibility, and decision process.

Second, after the trainee has become aware of his own basic unity and the unity of his students, then we must lead him to attend to the different unintegrated facets of his self so that he can join these facets into an undifferentiated whole. He will then be directed towards the creation and use of methods to be used to aid his students to attain this unity for themselves. This is explained in preliminary form in this section and in depth in the section on interpersonal skills.

As we have suggested, the end result of all these proposed activities is the creation of relationships within, between, and among people that consciously and unconsciously will be realistically attentive and flexible to the needs and desires of all those involved. We suggest that in the atmosphere of personal and mutual respect and unity that is engendered by these relationships that the most effective teaching of any subject may be accomplished.

Section II. Physiological and Non-Verbal Skills

RATIONALE

Our emphasis in physiological and non-verbal training is to produce a person who is free, natural, and aware. A general performance objective for this section and all activities in human relations training could be stated as follows:

> Upon successful completion of an individually selected program of non-verbal self-awareness training, the teacher trainee will be more fully aware of the relationship of body to mind, of himself to others, and of himself to his environment. He will be able to integrate activities to produce self-awareness into regular classroom practice and will also be able to use these activities to make himself a more complete, comfortable, and productive person.

It must be granted that a general statement as that above does not easily lend itself to the rigor of formal performance criteria. Thus the performance criteria in this section will be associated with specific activities. The essential criterion of performance will be simply, "can they participate in this activity and (from self-report) gain some benefit?"

We believe that the activities listed here bring a person to greater self-awareness which in turn results in a higher ability to be attentive, to be emphatic, to be flexible, or to attack problems such as aggression or race relations. At this point, the activities sometimes represent a statement of faith. Some are fairly common experiences, others are "far out." The Gestalt therapists and the many innovative programs at Esalen Institute, Big Sur, California, have had sufficient experience with these and related activities to suggest their potential value to general human relations and teacher training in particular.

A. Awareness of Self as Self

1. Physical awareness

Physical development has been traditionally delegated to a physical education department and its broader implications for human functioning have been ignored. New approaches which more closely integrate physical development with other aspects of the self need consideration. This area of what Huxley (1966) has called "the non-verbal humanities" remains virtually unexplored territory.

a. Performance Criterion: The teacher trainee will demonstrate his ability to relax his body physically using the progressive relaxation system of Jacobson (1938) or Gunther (1967).

Measurement:

Trainee will demonstrateknowledge of the system by explaining it to an observer and by demonstrating it himself. A trained observer will test the extent of the relaxation by moving the relaxed limbs. Experience suggests that the critical test is the relaxation of the neck muscles such that the head can be lifted and lowered without tension.

Instructional Alternatives:

1. Teacher trainee will attend a relax-in held at the School of Education, run by an Esalen-trained leader.

2. Teacher trainee will do the Gestalt Therapy exercises in Perls, Hefferline, Goodman Gestalt Therapy having to do with body awareness and relaxation.

b. Performance Criterion: The teacher trainee will teach another person the techniques of relaxation.

Measurement:

The student of the trainee will be tested by a trained observer for knowledge of the steps in the particular technique used and for extent of muscular relaxation, with particular emphasis on relaxation of the neck muscles.

Instructional Alternatives:

1. Teacher will practice teaching another person the techniques of relaxation.

2. Teacher will practice teaching a group of five students the techniques of relaxation.

c. Performance Criterion: Control of pain. Huxley (1966) describes the potential in teaching children how to control pain. "Pain is not simply a mechanical affair of peripheral receptors and special centers in the brain, and its intensity is not directly proportional to the extent of the injury which is its cause." Following Huxley's point of view, it seems feasible to use a combination of relaxation and attending behavior procedures (see section attending behavior) to teach a person to control pain.

1. The teacher trainee will relax his body physically through a series of relaxation exercises. He will then attend to the specific feelings in one part of his body (e.g., the feelings of one's large toe in a shoe).

Measurement:

The trainee will provide a running verbal report of his sensations and emotional responses during the relaxation and concentration exercises. The responses of the subject will be watched by a highly trained observer who will judge the extent of focusing of attention from signs as slowing of blink rate, lack of small muscle movement, and lack of rapid response to irrelevant external stimulation from noise and light.

Instructional Alternatives:

1. Teacher will practice on his own the relaxation techniques and selective attending exercise. Lying on the floor, he should relax through deep breathing, tensing and loosening the muscles, stretching, shaking his limbs, etc. Then concentrate his attention on one part of his body (feelings of his mouth and jaw), repeating with sentences prefixed with "here and now I..."

2. Teacher will selectively attend to one part of his body which is usually tense repeating the "here and now I..." sentences.

2. The teacher trainee will control pain in a real life setting. This may be the control of a headache, the pain associated with menstrual cramps, a cut finger, or other painful experience. It may be observed that withstanding pain is defined here as the ability of the individual to attend to a different stimulation in his environment than that of the pain experience. No artificial tests of pain control will be imposed in this performance criterion, since such tests might involve physiological damage.

Measurement:

Self-report of the trainee is the only possible criterion. Physiological measures of pain response, such as GSR, frequently do not change, even though the subject does not feel the associated pain.

Instructional Alternatives:

1. Teacher will practice withstanding pain three times as the pains arise by selective attention to another or other stimuli in his environment.

2. Teacher will read Huxley (1966).

3. The teacher trainee will train another person in the basic techniques involved in controlling pain.

Measurement:

A trained observer will watch the training procedure and will check the trained person for the signs of narrowing of attention indicated above.

Instructional Alternatives:

1. Teacher trainee will practice training another person to withstand pain.

2. Teacher trainee and subject will decide on a stimuli in their interpersonal relationship and practice attending to other stimuli.

d. Performance Criterion: The teacher trainee will demonstrate his ability to use relaxation and attending behavior techniques in a personal situation in which he finds himself uncomfortable. Oetting (1964), for example, describes the use of relaxation and concentration to help students handle examination anxiety. Ivey (1968) described the manner in which these constructs could be used in inter-personal situations.

Measurement:

Trainee will provide a case report with detailed analysis of the stimulus conditions creating the anxiety or tension, the approach that he used to develop his relaxation skills, how effective they were, and will demonstrate the technique for an observer. The situation can be widely varying from social situations to examinations.

Instructional Alternatives:

1. Teacher will read the articles of Oetting (1964) and Ivey (1968) on handling anxiety.
2. Teacher will write a practice case report of an uncomfortable situation in which he uses the relaxation and selective attending techniques to overcome the stress (e.g. meeting a person he doesn't like, giving a speech, taking off in an airplane.)

e. Performance Criterion: The teacher trainee will successfully learn at least five Lowen exercises (Lowen, 1958) and will teach five of these exercises to another person. These exercises represent a specific attempt to integrate physical and emotional functioning.

Measurement:

A trained observer will indicate that the student has successfully engaged in five of the exercises and that the student has successfully taught five exercises to another person.

Instructional Alternatives:

1. Teacher will read Lowen (1958) and choose ten exercises.
2. Teacher will practice five Lowen exercises, practice teaching five Lowen exercises to others, and write a report on the integration of physical and emotional functioning which he perceived.

f. Performance Criterion: The teacher trainee will explore at least one formalized physical technique demanding extensive muscular control including relaxation and concentration.

This could be a technique such as:

1. Yoga exercises
2. Akido
3. Tsi Chi
4. Judo
5. Karate
6. Autogenic Training

Measurement:

An experienced instructor in the selected techniques will certify that the student has developed an intermediate level of skill. This will include knowledge of the basic principles of the technique and its underlying philosophy and a practical skill beyond that of a novice or beginner.

Instructional Alternatives:

1. Teacher will read about the philosophy and practice of the formalized physical technique he elects.
2. Teacher will set up and undergo a training routine with the experienced instructor who will later be his judge.

g. Performance Criterion: Teacher trainee will when wired to an electro-encelphalogram, demonstrate the ability to control brain wave functioning (Kamiya, 1968).

Measurement:

The trainee will maintain the same relative body position with eyes either opened or closed throughout the test period. During a specified ten second period he will create a change in one of the major EEG rhythms (i.e., alpha, kappa, etc.). The same changed pattern will not occur during the minute preceeding the ten second period, nor the minute after. He will repeat this criterion at least twice out of three trials in a single twenty minute session.

Instructional Alternatives:

1. The teacher trainee will read Kamiya (1968) and experiment on his own with the control of his brain waves.
2. Teacher trainee will participate in a training session with an instructor who can control his own brain waves and who can wire the trainees up to an electro-encephalogram for practice purposes.

h. Performance Criterion: The teacher trainee will participate in a modern dance class and show improvement in the integration of his bodily function.

Measurement:

The modern dance instructor will certify that the student has an intermediate level of skill in modern dance including a knowledge of basic principles and philosophy and skill in the fundamental techniques beyond the novice level.

Instructional Alternatives:

1. Teacher trainee will utilize relaxation techniques on his own, listening to a slow classical record at the same time. After becoming relaxed, trainee will then move his body in response to the music in any way the body wants to respond.

2. Teacher trainee will participate in the movement workshop given by Josie Taylor of the Esalen Institute.

i. Performance Criterion: The teacher trainee will teach a micro-teaching class for five minutes and demonstrate his ability to control class physiological response. During that time he will by his own physical control non-verbally "tighten" and "loosen" the class during a discussion. He will do this by alternately utilizing intense attending behavior, (intense eye contact, a tense physical posture, a "tight" voice) and relaxation procedures (eye contact, loose physical bearing through relaxation training, and a "warm" voice.)

Measurement:

The class will take a rating scale of the semantic differential format during a normal micro-teaching session. The scale will include bipolar adjective pairs with evaluative content, but will also include adjective pairs such as tight-loose, tense-relaxed, etc. in relation to the concept Myself. The instructions will be to evaluate carefully their responses to class content and how their responses change during the class period. A mean change of one full rating unit on a seven point scale in a class of six will indicate successful change in feeling.

Instructional Alternatives:

1. Trainee will practice his ability to control others' physiological response in one-to-one situations which arise during the day.

2. Trainee will watch a videotape of model teacher demonstrating this skill in a micro-teaching situation.

2. Non-verbal awareness

a. Performance Criterion: The teacher trainee will teach a five minute micro-teaching class with exclusive use of non-verbal communication techniques.

Measurement:

The trainee will indicate the ideas or concepts he is trying to communicate to the class non-verbally. The class will take a test of the trainee's devising that will, in the opinion of an observer, assess whether those ideas, concepts, or attitudes were communicated. Class performance on the test will be evaluated by the observer. (The test may be written, oral, or non-verbally administered.)

Instructional Alternatives:

1. Trainee will practice exclusive use of non-verbal communication techniques with another person, including gestures, facial expressions, touch, body positions.

2. Trainee and fellow trainees will play charades, using scientific and social scientific concepts for solution-problems.

b. Performance Criterion: The teacher trainee will experience at least three of the series of non-verbal exercises such as those suggested by Schutz (1967) or Perls, Hefferline, and Goodman (1951) and teach at least one other person to experience them.

Measurement:

The trainee will provide a report (either oral or written) on the exercises attempted and on his response to them. The person trained by the student will report on his experience to a trained observer who will judge whether the student adequately communicated to the person involved.

Instructional Alternatives:

1. Trainee will select ten of non-verbal exercises in Joy and Gestalt Therapy and do them alone.

2. Trainee will select three of the ten and practice-teach a group of others how to do them.

c. Performance Criterion: The teacher trainee will demonstrate his ability to use five non-verbal skills in two person interaction in a five minute micro-counseling situation.

Measurement:

The trainee will, before the session, indicate the five non-verbal skills he plans to use. After the session, he will replay the video tape for the observer and the client, first asking the client what was being communicated, then replaying the tape and indicating where he used which skills. The observer will rate the skills both on the basis of his impressions of their effectiveness and on the basis of the client's response.

Instructional Alternatives:

1. Trainee will read the publication of Ivey, Normington, Miller, Morrill, and Haase (in press) on attending behavior and develop non-verbal skills for two-person interaction use.

2. Trainee will observe videotapes of micro-counseling sessions and note the non-verbal skills of the counselor.

3. Trainee will participate in micro-counseling session in which he is the client. He will list the non-verbal communication skills of the counselor.

d. Performance Criterion: The teacher trainee will spend a day alone without talking to anyone. This day may be spent walking in the woods, moving about the city, sitting alone in one's own room without engaging in study, reading, or other usual pursuits. The emphasis on this experience is on the individual becoming more aware of what it is like to be alone.

No evaluation is planned.

e. Performance Criterion: The teacher trainee will explore one of the philosophies involving meditation such as those of Zen, Yoga, or other disciplines.

Measurement:

An individual with considerable background in the selected philosophy will certify that the trainee has good knowledge of the basic philosophical principles and has used the meditation exercises involved.

Instructional Alternatives:

1. Trainee will read Yoga Postures for Self-Awareness and establish a routine for doing yoga with a group of fellow students.

2. Trainee will seek out an Indian, Chinese, or Japanese foreign student who has more direct experience with either Zen or Yoga and discuss/experience it with him.

3. Integration of Non-Verbal and Physical Skills

Performance Criterion: The teacher trainee will demonstrate his ability to use the techniques of self-awareness.

Measurement:

The techniques to be used will be selected by the student and discussed before the class with an observer. The observer will evaluate the class or video tapes of micro-teaching requiring that each technique be used appropriately and effectively by the trainee.

Instructional Alternatives:

1. A written summary of possible techniques to use in a class.
2. Use of a variety of self-awareness techniques in a micro-teaching class. The techniques to be chosen by him or use of these techniques in a regular class.
3. Development and implementation of new techniques rather than relying purely on techniques which have been taught.

Measurement:

These new techniques will be reported via a written summary or a video tape. Their effectiveness will be evaluated by an individual trained in the techniques of non-verbal communication.

4. Verbal Awareness

a. Performance Criterion: The teacher trainee will write an autobiography of life experience which describes himself as completely as possible.

Measurement:

The autobiography will be evaluated with a check list defining the specific components demanded by a thorough developmental autobiography such as; socio-economic background of early family, changing socio-cultural background during developmental years, identification figures during early years, pre-adolescence and adolescence, peer group culture and absorption of peer values, early career development experiences, etc. Each of the checklist categories must be rated as present and must have been related to the present ability and need structure of the trainee.

Instructional Alternatives:

1. Trainee shall read an autobiography specified by the evaluator which has the "specific components" which the evaluator will demand of the trainee.
2. Trainee will write an outline of his autobiography and meet with a group of his fellow trainees who have done the same in order to criticize, compare, and develop new dimensions for evaluation.

b. Performance Criterion: The teacher trainee will successfully complete a programmed text or computer course in self-awareness (e.g., Berlin, 1965).

Measurement:

The trainee will complete all course materials in the program scoring 100% on review sections of the programmed material.

Instructional Alternatives:

1. Trainee will complete a programmed text on how to write a program.

2. Trainee will write his own programmed text for developing self-awareness.

c. Performance Criterion: The teacher trainee will enter a series of personal counseling sessions centered around a specific behavior change desired by the trainee and agreed to by the counselor.

Measurement:

The trainee, the counselor, and one relevant other in the trainee's environment will agree that the specifically selected behavior has changed in a positive direction.

Instructional Alternatives:

1. Trainee will observe videotapes on behavior changes produced in micro-counseling sessions.

2. Trainee will set up and carry out a series of personal counseling sessions centered around a specific behavioral change which he and a paid high school student agree upon.

d. Performance Criterion: The teacher trainee will demonstrate the ability to conquer one distinct fear or phobia through participating in a personal counseling or a desensitization exercise. (This could be exemplified by Bandura's (1968) excellent work with snake phobia in which he trained 30 extreme snake phobics to allow snakes to crawl over them for a five minute period.)

Measurement:

The specific fear or phobia will be specified before the experience and a task will be specified at that time that demonstrates the resolution of the condition. The trainee will successfully complete the task specified after the counseling or desensitization experience.

Instructional Alternatives:

1. Trainee will read Bandura (1968).

2. The specific approach will be determined by the trainee in consultation with a professional trainee.

3. Trainee will attempt to conquer one fear through setting up his own desensitization process.

e. Performance Criterion: The teacher trainee will use fantasy and free association to solve practical problems in everyday life of the classroom. The trainee will draw analogies from fantasy (via songs, art, cartoons) to aid in the solution of problems. Jones (1966) describes the use of fantasy to solve problems in some detail.

Measurement:

The trainee will produce fantasy materials or suggest free association techniques applicable to three standardized problem situations presented to him. These will be rated against standard responses of differing levels of quality, to obtain a total score. The score must be above that obtained by 90% of novices attempting this taks.

Instructional Alternatives:

1. Trainee will have a group of students focus on one common problem in their everyday lives. Students will discuss it for ten minutes and then start humming notes until one student starts humming a recognizable song. Trainee will participate also and, when the songs are recognized, try to apply the words of the song or the feeling of the song to solve the problem.

2. Trainee will read Jones (1966) and write out his fantasies for solving the problem of an uninterested student in his classroom.

5. Integrated experience

Introduction: Gestalt Techniques stress integrated experience as the central focus of attention. A complete series of integrated exercises exists.

a. Performance Criterion: The teacher trainee will show his ability to participate fully in the Gestalt therapy experience.

Measurement:

There are many highly specific Gestalt exercises for which detailed performance criteria may be developed. In addition, a special rating form will be developed allowing trained raters to observe the behavior of trainees and reliably rate the extent of successful involvement in Gestalt processes. Raters will compare the trainee with standard tapes showing high, adequate, and poor involvement. Overall rating must be above the adequate level.

Instructional Alternatives:

1. The trainee will participate in a Gestalt therapy and/or instrumental group.

2. The trainee will study Gestalt techniques formally through a seminar and reading.

Performance Criterion: Demonstrate his ability to use Gestalt techniques freely in a micro-teaching class.

Measurement:

The student will specify the particular techniques that he is going to demonstrate. He will go through the video tape or several tapes with a trainedobserver, pointing out his use of the various approaches. The observer will evaluate his skill, requiring clear evidence of appropriate and effective use of each different approach.

Instructional Alternatives:

1. Trainee will develop use of Gestalt techniques in a classroom situation using fellow trainees as subjects.

2. Trainee will read Brown and Gaynor (1967).

B. Awareness of Self in Relation to Self and Others

The exercises and performance criteria under intrapersonal skills have thus far centered on making the individual more aware of himself, more in tune with the relationships of body to mind, and aware of the wholeness of human experience. This section takes three key dimensions of human experience (attending, flexibility, and decision process) as key *processes* for both self-awareness and awareness of others.

It is suggested that the skills of attending to others (and to self), being flexible to adapt to new inputs and being able to produce new outputs, and being able to make decisions are three vital areas of human performance and represent, we believe, perhaps the most vital aspects of being fully human. On the other hand, these skills do not represent for the most part value stands. Rather, they are descriptive of some facts of human existence as they are.

These three concepts are best considered within the model of *pulsating thinking* as defined by Ivey (1968). A detailed discussion of the concepts of pulsating thinking follows.

Human relations is defined as behaviors exhibited in relation to self and other individuals, and with groups. Thus an individual thinking about himself is engaging in human relations behavior (in this case, the direct observation of behavior is available only to the individual behaving). Two individuals meeting in an interpersonal interaction are engaging in human relations behaviors. School classrooms or group dynamics sessions are situations in which a vast number of human relations behaviors are going on. In short, any behavior or behaviors engaged in intra- or interpersonal activity represents human relations behavior. No one can escape behaving in a human relations framework.

Any human relations behavior represents a value decision. To behave means to decide. Decision making implies three phases of activity:

1) a problem is defined. One must concentrate or *attend* to the relevant facts and experiences of the situation. In human relations we might consider the issues of how a principal might respond to a child "sent to the office." (It may be observed that defining the problem actually represents considering alternatives (being flexible) for definition of the problem and then committing oneself (decision) to a definition.)

2) consideration of alternative solutions to the problem (flexibility). This step represents "divergent thinking" and is closely allied to concepts of creativity. Once a problem is defined, it is essential that many alternative solutions be considered. In the case of the school child, the principal should consider many alternatives for his behavior (e.g., a

spanking, a scolding, a warm fatherly chat, do nothing, etc.).[1]

3) a decision is made to commit oneself to what is seen as the most likely alternative. The principal might decide to listen to the child and then decides to try to help the child see the implications of his behavior and then suggests changes to both the student and the teacher. Important in effective decision making or "convergent thinking" is the ability to reflect constantly on the decision made and to be able to change one's mind should additional evidence present itself.

4) Now, while it is possible to describe the decision framework as it has been above, it is equally clear that most human behavior does not slowly go through such a process. Most of our behavior is "automatic." Courses in school administration, the micro-teaching framework, laboratory experiences in science all attempt to bring the learner to greater awareness of the processes by which such decisions are made. They then can return to automatic behavior, but at any point they can return to their decision framework to help clarify difficult problems. Training in human relations can involve the same process of bringing methods of decision to increased awareness.

5) The object of this section is to bring the processes of decision to increased awareness.

This type of approach to thinking and behaving could be called "pulsating thinking." It is behavior which involves individuals constantly in divergent and convergent thinking in their effort to understand and organize their world. Distinctions between convergent and divergent thinking may be unnecessary. While three phases have been presented for decision making, it may be observed that each of the three phases involves simultaneously consideration of alternatives and simultaneous decisions. For example, when an alternative is added to a framework, the selection of the alternative was a decision. The outline below provides a summary portrayal of pulsating thinking.

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[1] It could be observed that much work in creativity stops at this stage. A limitation in divergent thinking concepts is that divergence is sometimes seen as an end in itself. Similarly, group dynamics sessions often end with the consideration of alternatives for behavior, and consider decisions for behavior only peripherally. By not deciding to commit oneself to a course of action, an important decision has been made...that of deciding not to decide.

SCHEMATIC PRESENTATION OF PULSATING THINKING

Stage I: Problem Definition

A. Consideration of alternative definitions of the problem. (Divergent thinking)

B. Tentative commitment to one definition of the problem. (Convergent thinking)

Stage II: Consideration of Alternative Solutions

A. Development of as many alternative solutions to the problem as possible. (Divergent thinking)

B. It may be noted that the decision to include a thought as a possible alternative solution or reject it as irrelevent to the problem is convergent thinking.

C. If it is difficult to discover alternatives, a redefinition of the problem and a return to Stage I may be necessary. (Feedback)

Stage III: Decision for Action

A. Consideration of the possible implications for action of each alternative. (Divergent thinking)

B. A tentative commitment is made to a course of action. (Convergent thinking)

C. If none of the alternatives seems suitable or the decision proves inadequate, return to State III.A. to examine other alternatives, or Stage II to develop new alternatives or Stage I to reconceptualize the problem. (Feedback)

Unfortunately many people operate in highly sterotyped ways. Once they decide what the problem is, they proceed to consider a solution and may fail to remain flexible enough to consider that perhaps they have not considered all available alternatives. Or more seriously, they may be attacking the wrong problem. Pulsating thinking implies that the individual should always be able to view his entire decision making process and be able to go back to the beginning and redefine the problem based on new input or the failure of alternatives to provide satisfactory answers to the problem. One finds few teachers, administrators, students, or human relations situations where stereotyped thinking and lack of flexibility does not harm the creative process.

Tiedeman (1967) has considered the same issues:

> The basic curriculum in my prescribed framework for education will have to be that of decision making. The process of discovery is basically that of decision making ... Finally, the capacity to act from a decision frame in an effort to realize an intended aim. If a person carries the decision making framework in his mind so that he can reflect upon his actions in relation to his intentions and their efforts, he has achieved the responsible freedom which I advocate. He can live the paradox of predicament in choice and goal, namely, be committeed and tentative. (p. 6)

Essentially, Tiedeman is suggesting that human beings must constantly commit themselves to a course of action, but they should constantly reflect on that course of action and remain tentative. In this position no commitment is made without tentativeness or considering alternatives for human action. Few decisions are final . . . one makes decisions constantly.

This view of human relations behavior is consonant with effective administrative procedures, teaching, or studying. The physics student in laboratory must first define his problem, consider alternative solutions, and commit himself to an approach. In considering ways to present history to a class, the effective teacher must use the same three step process. Important with the administrator, the physics student, or the history teacher are the same processes of decision making (pulsating thinking) which are involved in human relations behaviors.

To summarize the objectives of this sub-section, it may be stated that the concepts of attending behavior, flexibility, and decision process as presented here represent the components of pulsating thinking. The specific objectives of this section are:

1. To present performance criteria for attending behavior, flexibility, and decision process.

2. To present these performance criteria in such a way that a hierarchy is developed building upon basic skills. Thus, for example, we will begin with relatively precise behaviors in attention (eye contact, verbal following) and build upon these to broader, more complex constructs such as empathy.

3. The material on attending and flexibility, in particular, do not represent value commitments. They represent an attempt to describe the world as it is (attending) then organize it in alternative ways (flexibility). Decision process is also presented in a fashion which is not a value commitment at this point, but does describe the manner in which a person makes a value commitment.

Thus, a general performance criterion for this material might be stated as follows:

> The teacher trainee will demonstrate his ability to note the relevant particulars of a situation, to produce alternative organizations of those particulars, and, finally, be able to commit himself to one organization.

This model, of course, represents the concepts of pulsating thinking presented here in some detail. Measurement of this general performance criterion will be by the following methods: 1) overall measurements of self-concept and specific achievements mentioned in Section I. General Performance Criteria for Human Relations; 2) the ability of the teacher trainee to integrate these activities into regular classroom practice once he begins teaching as measured by self-report, videotapes of classroom performance, and by measures taken of the trainee's students; and his supervisor's satisfaction the processes by which he has attended, been flexible (or inflexible), and has made decisions.

1. Attending behavior

Crucial to the learning of any skill, physical or mental, is the ability of the individual to pay attention, to attend to his environment. Skinner (1953) considers attention a generalized reinforcer and indicates that attention to a person or object is a vital and "necessary condition for other reinforcements to come from them." He suggests that "much of the elaborate art of looking and listening cannot be taught simply by reinforcing the student when he responds in ways which show that he has previously looked and listened carefully. Direct instruction (in attention) is needed."

Ivey, Normington, Miller, Morrill, and Haase (in press) have demonstrated that the skill of "attending behavior can be taught to beginning counselors within the micro-teaching framework." They identified three key dimensions of attending behavior: (1) eye contact; (2) physical attention; and (3) verbal thought and behavior. They suggest the basic skill of counseling is simply attending to the client. Kennedy and Thompson (in press) dramatically illustrate how teaching a hyperactive child the constructs of attending behavior changed classroom behavior markedly. In this case, Kennedy has taught the child how to attend to a teacher in a classroom.

Ivey (1968) has discussed the broad implications of attending behavior for human relations. He has discussed a broad range of topics from the framework of attending behavior. Hypnosis and meditation, for example, are viewed as narrowed states of attention in which the person attends to only one stimulus. Memory could be considered to be heavily based upon the individual's ability to attend to his environment. A hyperactive child or adult, on the other hand, is not able to attend to specifics in his environment, and constantly changes his processes of attention never fixing on one point. A basic problem constantly changes his processes of attention never fixing on one point. A basic problem in marriage or interpersonal communication is the inability of one or both parties to attend or hear what the other person is saying.

Thus, a major instructional goal in human relations training is helping the teacher trainee understand and gain control of his own attentional processes. Special emphasis will be on attending to the behavior of others. It may be observed that Rogerian reflection of feeling is viewed here as an exercise in "selective attending." The ensuing list of performance criteria rests heavily on the ability of the individual to both attend and selectively attend to his environment.

A. General Attending Behavior

Criterion 1: The teacher trainee will demonstrate his ability to attend to another person for a five minute micro-teaching session by maintaining eye contact with him, by assuming an attentive posture, and by exhibiting verbal following behavior by staying on the other's topic.

Measurement:

A general rating of attending ability will be made by a naive client in a micro-counseling situation and by a trained observer. The rating form will include items relating to eye-contact, posture, verbal following, and general social impact. An average score of four on the five point scale on each of these scales would be expected from both the observer and the naive subject. Preliminary work suggests that this score represents a reasonable expectation from training and a reasonable level of attending skill. The student himself will also rate his comfort in the situation and with attending skills.

Instructional Alternatives:

1. The trainee will observe a videotape of a beginning counselor before and after he has been trained in attending behavior.

2. The trainee will practice eye contact, attentive posture, and verbal following in conversations with other people during a normal day, using the techniques with some, not using them (being his old self) with others, and consciously using them and not using them in one conversation.

Criterion 2: The teacher trainee will demonstrate his ability to attend to personal and non-personal stimuli in his environment:

P.C. (a) By naming objects after brief visual exposure to a series of films which objects are screened at a variable rate demanding increasing complexity on both perception and response.

Measurement:

Scoring is based on improving accuracy of object naming and speed of accurate object perception. Standards of accurate performance can be established for each film. As the student meets a standard he moves on to a more difficult film.

Instructional Alternatives:

1. Trainee will practice naming objects after brief visual exposure to series of films with a similar series of films to the ones to be used in evluation.

2. Trainee will practice going into a room looking around for 10 seconds, closing his eyes, then naming objects in the room to an observer.

P.C. (b) By describing a person adquately after a 10 second observation.

Measurement:

The criterion will involve viewing a video tape of a person where previously standardized descriptions are available. A check list will be filled out by an observer indicating whether the description adequately assessed the physical characteristics, gestures, posture, verbal behavior, emotional responses, and pattern of visual attention.

Instructional Alternatives:

1. Trainee will practice describing a person adequately after 10-second observation.

2. Trainee will view 5 video tapes of 10-second observations of people and describe their physical characteristics, gestures,

posture, verbal behavior, emotional responses, and pattern of visual attention.

P.C. (c) By describing a child after 5 minute video tape observation. The tapes will include children alone, playing with objects, and interacting with other children or adults.

Measurement:

A check list will be filled out by an observer indicating whether the description adequately assessed the physical characteristics, gestures, posture, verbal behavior, emotional responses, and patterns of attention of the child. Additionally, the description of later tapes will include observations of the character and extent of interactions of diads and of the shifting interaction patterns in groups.

Instructional Alternatives:

1. Trainee will practice describing a child after a five-minute observation, having prepared in advance his own checklist of things he was to look for.

2. Trainee will practice watching groups of children for 1 min., 2 min., 3 min., 4 min., and 5 min. periods, writing down a description of the children, their interaction with each other, and their interaction with objects after each observation.

P.C. (d) By remembering the names of 20 people shown to him in succession on a video tape. Following this, the student will remember the names and occupation of his classmates who have assumed false names and a fictitious occupation.

Measurement:

The student will be shown a video tape showing each of the persons in the previous film again, but without sound. He will recall each name accurately. In the group he will recall the fictitious names and occupations of at least 75% of the class.

Instructional Alternatives:

1. Trainee will practice with video tapes of 20 people shown in succession whose names he must remember for a second run-through without sound.

2. Trainee will practice with a group of students who take on fictitious names and occupations. He will try repeating each new name as it is spoken and verbally place it in order (e.g. student: Sally - Secretary Trainee: Sally - Secretary - Let's see now we have Jim - Plumber, Bob - carpenter, Louise -

washerwoman, and Sally - secretary).

P.C. (e) By summarizing the interactions of a group observed on a video tape in terms of Flanders Interaction Analysis procedures.

Measurement:

The scoring will be in agreement with that of an expert who previously scored the tape.

Instructional Alternatives:

1. Trainee will hear a lecture and have a demonstration lab on Flanders Interaction Analysis procedures.
2. Trainee will practice summarizing the interactions of a group observed on a videotape by using the Flanders Interaction Analysis procedures.

Criterion:

3. The teacher trainee will demonstrate his ability to attend to events in a class he is teaching by identifying:

P.C. (a) which students are apparently attending to his presentation and which are not by their verbal, visual, and physical attentiveness as defined above.

Measurement:

A trained observer will fill out a previously prepared class description form showing each student with ratings of verbal, postural and visual attention during the final 15 minutes of a lesson. The teacher will fill out an identical form immediately after the class ends. A comparison of the two forms will be expected to meet an established standard of agreement.

Instructional Alternatives:

1. Trainee will present a lesson to a micro-teaching class for 15 minutes. Immediately following, he will practice rating their verbal, postural, and visual attention.
2. Trainee will observe another teacher's class for 15 minutes. Immediately following, he will rate the students on same dimensions and have the teacher do the same rating. He will discuss the differences in perception between himself and that teacher, and then reverse roles with that teacher, using the same rating procedure after the 15 minute session.

P.C. (b) describing what happened in one of his five minute micro-classes through categorizing the interactions by use of Flanders Interaction Analysis and comparing this with an actual video tape replayed as scored by himself and a trained observer.

Measurement:

The scoring will be in agreement with that of the expert.

Instructional Alternatives:

1. Trainee will describe what happened in five-minute micro-class through an evaluation instrument he devises himself and evaluate the process with a supervisor.

2. Trainee will describe what happened in five-minute micro-class through categorizing the interactions by use of Flanders Interaction Analysis and comparing it to the categorizations of his supervisor.

B. Selective Attending

Criterion:

1. The teacher trainee will demonstrate his ability to attend and to reinforce through attending behavior a single topic presented by the client for a five minute micro-counseling session. This attending and reinforcement through attending behavior is known as selective attending.

Measurement:

In a selection of naive clients, the student demonstrates the ability to shape discussion to a narrow topic, selected by him after two minutes of the interview and written down at that time on a pad of paper. Trained observers will judge on viewing a tape, with knowledge of the selected topic, whether the student was successful in maintaining the topic through selective attending for the final three minutes of the interview.

Instructional Alternatives:

1. Trainee will practice selective attending on the suggested 2-minute/3-minute framework with an unsuspecting roommate or dinner partner.

2. Trainee will practice selective attending on the suggested 2-minute/3-minute framework as he talks to his supervisor.

Criterion:

2. While teaching a micro-teaching class the trainee will demonstrate his ability to continue the class while selectively attending to all students during the period the instructor is specifically concentrating on the needs of an individual student.

Instructional Alternatives:

1. Trainee will observe video tape of model teacher demonstrating his ability to continue the class while selectively attending to the reaction of one student.
2. Trainee will practice criterion behavior, having students complete the Class Attention Report, in a micro-teaching situation.

C. Reflection of Feeling; defined as selectively attending to the emotional or "feeling" responses of the other as opposed to attending to content as above. (Ivey, Normington, Miller, Morrill, Haase, in press)

1. The teacher trainee will be able to identify emotional responses of video taped clients.

Measurement:

After practice the student will view preselected video tapes where the emotional responses reported by the clients agree both with their own reports of their feelings during the interview and with the reports of experienced counselors viewing the video tapes. The students evaluations of the feelings being expressed will show high agreement with these reports.

Instructional Alternatives:

1. The trainee will practice identifying emotional responses of people he encounters during a one-hour period. He will record his observations and then review them with an experienced counselor.
2. The trainee will practice viewing video tapes of emotional responses of clients and get immediate feedback from a counselor-supervisor.

Criterion:

2. The teacher trainee will demonstrate his ability to reflect feeling to a client in a five minute micro-counseling session by attending to and reinforcing through attending behavior, the emotional responses of the client.

Measurement:

A trained observer will evaluate a video tape of the interview on the Reflection of Feeling Scale (Normington, 1967). A scoring standard will be developed for this scale.

Instructional Alternatives:

1. The trainee will read Ivey, "Attending Behavior: The Basis of Counseling," and test his conclusions by viewing three videotaped counseling sessions.

2. The trainee will practice reflection of feeling in a five-minute micro-counseling session by attending to and reinforcing through attending behavior the emotional responses of the client.

Criterion 3. The teacher trainee will be able to interpret the feeling and emotions of (a) Fellow participants in a T-Group or programmed sensitivity group, (b) Students who have participated in a stress conference, (c) Participants in a psychodrama session around standard topics.

Measurement:

The group leader will meet after group meetings with two of the participants, including the student to be evaluated. The student will be asked to discuss the feelings and emotions felt and expressed by the other participant during the meeting, who will comment and amplify on his actual responses. The group leader will evaluate the ability of the student and will use the session as a teaching device for both participants as well.

Instructional Alternatives:

1. The trainee will participate in a measurement session with the group leader.

2. The trainee will observe films of Fritz Perls' Gestalt Therapy sessions and practice using Gestalt Therapy on another student.

D. Summarization of feeling:

Criterion 1. The teacher trainee will, in a five minute micro-counseling session, demonstrate the skill of Rogerian summarization of feeling by verbally listing the emotions expressed by client and integrating these emotions into a central theme.

Measurement:

After training and experience, the student will observe preselected tapes judged by experienced counselors to show specific central themes and will correctly identify those themes. He will then engage in micro-counseling sessions with client observers trained to role play sessions with underlying emotional themes and will be expected to adequately summarize client observers.

Instructional Alternatives:

1. The trainee will read selected parts of Rogers' On Becoming a Person and will view videotapes of Rogers' counseling.
2. The trainee will practice the skill of Rogerian summarization of feeling, in a series of five-minute counseling sessions, by verbally listing the emotions expressed into a central theme. Experienced counselors, teacher trainees, and clients will then review and discuss lists and central themes.

E. Empathy

Deepest empathy comes spontaneously. Some would suggest that a person is not empathic if he is aware of his behavior. One completely loses sense of self and becomes fully aware of the other. It is our experience that empathy frequently appears spontaneously out of the specific behaviors of attending behavior selective attending, and reflection of feeling. While these activities lead to empathy, they are not empathy per se.

The introductory section of the human relations discussion described this issue in some detail. In essence, the performance criteria discussed perviously are behavioral. Empathy is the second level when one forgets self and loses himself in the other. Thus, the specific performance criterion for empathy is stated as follows:

Criterion 1. The teacher trainee will experience empathy with three different individuals at different times.

Measurement:

Self-report is to be the primary measure of empathy. Did the trainee "lose himself" in the session. This yes or no answer can be compared with the report of the other individual. It may be possible for the trainee to feel he was empathic, but he failed to communicate it to the other. In some cases, we may find the other believing the trainee was empathic when such was not so. The ideal case of empathy is when trainee, other (and an external observer on videotape) agree that empathic was experienced. Work by Higgins, Ivey, and Uhlemann (1968) suggests that estimates of the depth of empathy can be made by external observers watching a videotape of a two person interaction with good statistical reliability.

Instructional Alternatives:

1. The trainee will write a poem or meditation or free-flowing verse about a situation in which he "lost himself."

2. The trainee will self-consciously use the skills of attending behavior, selective attending, and reflection of feeling in conversations with others during one day, and write a meditation or verse on the depth of empathy he felt in each case.

2. Flexibility

There is a fairly large body of evidence that the teacher whose style is flexible, adaptable to many situations, (as contrasted with rigidity and fixed pattern of behavior or thought) is more effective in the classroom. Even on a purely intuitive level, the great complexity of the classroom situation and the high demands that situations place on the teacher in terms of making quick professional decisions suggest the necessity of openness, flexibility, and the ability to see alternatives.

For the teacher to respond in a fast and effective manner to new and unpredicted situations, he must have a large repertoire of responses which he can and does use, and he must be able to decide to use them quickly. Attending behavior and the self awareness activities are designed to give the Teacher many new and additional responses.

Flexibility may be divided into two areas: (1) in order to provide the groundwork of being flexible, the teacher must take in as much information and data as possible before making a decision, i.e., he must be open to information input and have a high level of tolerance for ambiguity; (2) he must be able to produce a large variety of possible responses to any given situation (divergent thinking) and then evaluate them so as to produce the "best" response in that particular instance (convergent thinking).

Thus, it may be stated that the broad skill of flexibility may be considered to consist of many specific behaviors. Following are some performance criteria which represent an attempt to describe some of the skills of the flexible teacher.

A. Input Skills in Flexibility

Criterion:

1. Clearly a basic part of input skills in flexibility are those associated with attending behavior and listening discussed earlier in this section.

2. A related set of constructs are those of empathy. Teachers must be sensitive to the needs and intent of their students if they are to be able to glean information from them in order to select an appropriate technique for each given situation. Related to this is the skill of "listening." Empathy as we have defined it is related to understanding the emotions of the student whereas listening, as defined by the Language Arts Task Force, is related to hearing the objective content of a communication.

3. The teacher trainee will express in written form his abilities to see differences and similarities between and among situations by:

P.C. a. improving his scores on a written analogies test.

Measurement:

The Analogies test that is to be constructed must be somewhat unusual when compared with the tests of analogies used in aptitude tests such as the Millers Analogies Test or the Ohio State Psychological Test. Generally, items have been sought with high reliability and resistance to specific learning situations. In this case, we are seeking items with high intra-test reliability, but with sensitivity to specific learning. The items should represent the varying forms of analogies, allowing the learning of new principles to be reflected in the test performance.

Instructional Alternatives:

1. The teacher trainee will take written analogies tests in which he gets immediate feedback as to the correct answer for each item.

2. The teacher trainee will take analogy tests with a trained person who will ask the trainee to explain the analogies characteristics of each word pair and supply the correct information to the trainee after answer is made.

P.C. b. viewing a film of a classroom in which a teacher role plays 15 alternative reactions to a single pupil action.

Measurement:

The student will identify the behaviors by listing the teacher behaviors in the film. A check list of actual behaviors will be compared with his list.

Instructional Alternatives:

1. The student will practice identifying teacher behaviors shown on a film.
2. The student will tell a bad joke to various people and noting carefully in written form the similarities and differences of response by those hearing the joke.

P.C. c. The trainee will chose the three behaviors he favors from the film and will generate a list of student behaviors which he feels would result from the three alternatives he has chosen.

Measurement:

The responsive behaviors reported will be judged for their probable accuracy, and for recognition of factors entering into the responses such as social acceptability of emotional components.

Instructional Alternatives:

1. The trainee, having viewed a filmed teacher behavior in a classroom situation, will suggest possible resulting student behaviors and then view films of the actual student responses.
2. The teacher trainee will be given a teacher response to a classroom situation, be asked to predict resulting student responses by using that teacher response with several small groups of students in micro-teaching situations.

P.C. d. connecting seemingly unconnected events through the Conceptual Integration Game.[1]

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[1] The Conceptual Integration game consists of an apparatus with an eight sided central core, lighted from the inside, with eight different backgrounds. A surrounding core consists of eight segments each containing a different object. Surrounding this is an eight sided wheel, on which are printed eight different metaphors, representing fairly complex emotional states.

There are two players, white and black. The segments are all rotated at random. Both players view the same scene and either report separately to the judges how they interpret the combined stimuli or take turns reporting first in the presence of the other. Judges each have a white and a black marble. They hold the appropriate marbles over the table without exposing it to the other judges, simultaneously showing the marble. Winner is the one with the majority. Winner of the game is the one with the larger score after 25 trials.

Measurement:

Students will compete in the Conceptual Integration Game. Three judges, experienced with the game, will judge by ballot the separate integrations of two students. A student will obtain higher scores than two other students who do not have previous game experience.

Instructional Alternatives:

1. The trainee will practice the Conceptual Integration Game.

2. Two trainees will construct their own conceptual integration games and have each observe the other playing his game.

Criterion:

4. A teacher trainee will demonstrate tolerance of ambiguity in

P.C. a. A tachistiscopic information processing test.

Measurement:

Measurement should consist of setting a standard for performance on the test in terms of the way the test is scored.

Instructional Alternatives:

1. The teacher trainee will practice taking the tachistoscopic information test.

2. The teacher trainee will read about the tachistiscopic information test.

P.C. b. There are three fundamental types of conflict that can lead to ambiguity, approach-approach, approach avoidance, and avoidance-avoidance. Beyond this simple form of conflict are many complex forms, such as double approach avoidance. A series of role player situations will be developed, beginning with the simple forms of conflict. The student will discuss the particular situation as though involved in that role.

Measurement:

The amount of time that the student is able to spend in the role considering, without repetition or rigidity, the varying aspects of the conflict situation represents a measure of his tolerance for ambiguity. Judgements will be made of his thoroughness in considering all alternatives before reaching a decision and of his tendency to resolve conflict by jumping to a decision without full consideration. A further measure of failure to tolerate ambiguity is leaving the role.

Instructional Alternatives:

1. The trainee will be given a task with directions purposefully left vague and asked to perform that task and discuss his method of doing so. A sample task might be that of repairing a leaking garden hose given a tube of rubber cement, string, scissors, a hose clamp, plastic tape, and an old inner tube.

2. The trainee will role-play a student faced with being drafted and faced with the alternatives of jail, self-imposed exile, getting an occupational deferment, trying to continue grad school, enlisting, or just waiting to be drafted.

P.C. c. by role playing a five minute two person interaction and then being able to switch (reverse) roles with the other and continue the interaction. After this five minute interaction, the trainee will continue the dialogue by playing himself and the other person for five more minutes switching seats as the dialogue demands his movement.

Measurement:

Ratings on the scales of attending behavior and empathy by trained observers will remain consistently high when roles are switched and when the student plays both roles.

Instructional Alternatives:

1. The trainee will recall a recent dialogue that he observed and overheard and have him role play both roles of that interaction.

2. The student will role-play a teacher-parent conference taking the role of the parent first and then switching to the role of the teacher.

P.C. d. In a micro-teaching situation, the students, unknown to the instructor, will be selected and trained. They will purposely disrupt the class through two separate methods at different times, irresponsible behavior, and forcing the lesson to a different theme.

Measurement:

Ratings of the teacher on scales by trained observers will show continued adequate functioning under these circumstances. Ratings of the observer-students in the classroom will include ability to remain calm under stress and ability to tolerate and deal with ambiguity.

Instructional Alternatives:

1. The trainee will observe films of a master teacher reacting to attempts of students using various means to disrupt a classroom lesson.

2. The trainee will take the part of a student trying to disrupt a class by forcing the lesson to a different theme and observe carefully how the master teacher handles the situation.

B. Output Skills in Flexibility

1. The teacher trainee will demonstrate his ability to generate multiple hypotheses and alternatives:

P.C. a. by writing within a 15 minute period alternative courses of action to solve a given classroom problem. He will select from them several alternatives that appear best.

Measurement:

The student will defend his oral or written alternatives to a group of not less than three other students and a faculty member. After discussion, all of these must agree that the alternatives are practical and potentially effective.

Instructional Alternatives:

1. The trainee will suggest alternative courses of action to solve a given classroom problem and discuss these alternatives with a master teacher.

2. The trainee will view film of master teachers enacting alternative solutions to given classroom problems and discuss the merits of these solutions with a master teacher.

P.C. b. by listing in a 15 minute period alternative explanations of a given student behavior. He will select from these several alternatives that appear best.

Measurement:

Ratings of effectiveness by members of the two classes and by trained observers of video tapes of the classes will be high.

Instructional Alternatives:

1. The trainee will view films of a given student behavior and discuss alternative explanations of these behaviors with a master teacher.

2. The trainee will observe problem classes with an expert counselor make alternative explanations of given observed student behaviors, and listen and ask questions as the counselor talks with the problem students about their behavior.

P.C. c. by demonstrating his ability to use in rapid succession three different approaches to a micro-teaching class that role plays a single piece of behavior several times.

Measurement:

The micro-teaching class will rate the trainee on ability to remain calm and on continued effectiveness. Trained observers will rate the video tape of the session without knowledge of the order of alternatives. Effectiveness of the trainee will remain high on sequential alternatives.

Instructional Alternatives:

1. The trainee will see films of different approaches to a micro-teaching class roleplaying a single piece of behavior several times.

2. The trainee will use "in rapid succession..." (etc. under c).

Criterion:

2. The teaching trainee will demonstrate his ability to be flexible in his classroom planning.

P.C. a. by outlining in oral and/or written form several different teaching methods by which to obtain a specified student behavioral goal.

b. by changing the behavioral skills he uses to teach the same lesson to two different micro-teaching classes to illustrate his ability to utilize different micro-teaching skills.

Measurement:

The trainees will procure a minimum number of alternatives (established as a standard after testing naive and experienced students). Selected alternatives will be judged by trained observers on the basis of practicality and probable effectiveness. The observers may ask the student to defend his selection to obtain further information.

Instructional Alternatives (for a and.b).

1. The trainee will observe and discuss with an expert films of

different teaching methods by which to obtain a speicified student behavioral goal.

2. The student will attempt to attain a specified student behavioral goal with 3 different micro-teaching classes of which consists of highly motivated bright students, one of low-ability students, and one of problem students.

Criterion:

3. The teacher trainee will demonstrate his ability to function flexibly in a variety of intra and interpersonal situations. This could also be defined as going "out on a limb with a "daring" new approach.

P.C.a. The teacher trainee will demonstrate his ability to generate hypotheses and alternatives and then evaluate them to reach closure on a single course of action.

Measurement:

The student will score well on the Kagan speed of closure test.

Instructional Alternatives - None planned.

P.C.b. The trainee will participate in method drama and/or psychodrama in order to become aware of the experience of creating himself as a role and thereby enlarge his repertoire of behavioral responses.

Measurement:

Evaluation of degree of involvement and of flexibility of approach will be made by the method or psychodrama trainer. The student will also rate his own flexibility and involvement and his ability to assume roles adequately. (It may be possible to develop a forced choice rating instrument for student use with alternatives that are equally positive or acceptable but that have differing validities.)

Instructional Alternatives:

1. The trainee will observe others participating in a similar method drama, and finally discuss with an expert role behaviors in these before participating in the third of the series of method dramas.

2. The trainee will critique, with the aid of an expert supervisor, a videotape of his participation in a method drama and/or psychodrama.

P.C.c. The trainee will undertake sensory awareness training and develop the ability to use this training effectively.

Measurement:

The trainee will have his heart rate, pulse, and GSR monitored to a series of stimuli. One or more stimuli will be selected where a distinctive physiological response occurs. The trainee will plan his own sensory awareness exercises and will engage in these exercises until a post-test shows that the previous response is no longer present. The trainee will, in the judgement of the sensory awareness trainer, develop a series of potentially valuable sensory awareness exercises and engage in them on his own.

Instructional Alternatives:

4. The trainee will generate new alternatives to teaching methods presently used in the School of Education in written form. He will also generate new teaching techniques for the elementary and secondary school classroom. In short, through the use of many techniques offered in the human relations training program, he will have become a contributor to the development of new human relations techniques.

Measurement:

At least one of his activities or methods will be put into regular use by the School of Education or an elementary or secondary school.

Instructional Alternatives - None planned.

3. Decision-Making Skills

Decision making has traditionally been used to describe the process by which people have committed themselves to action. The assumption has been that there is a static point at which a decision is made. After this point it is thought that little if any change or alteration takes place in a person's commitment and direction.

We wish to suggest a different model to be applied to decision making - decision process. Understanding of this process, we feel, will allow a trainee who is facing a decision the opportunity to select a path of action with a more accurate sense of the situation and context in which he is involved. It will allow him to become aware of and take advantage of all the numerous kinds of feedback that will influence him to alter his commitment toward the most productive direction.

We wish to suggest that decisions of any kind, from career choice to classroom disciplinary choices, should not be considered as static commitments, but rather should be thought of as on-going processes in the global process of the individual's becoming and maturing. As a person discovers himself and therefore becomes aware of his needs, desires, and responsibilities, his commitments should change and grow as he changes and grows. Instead of committing himself to an inflexible path, the trainee will look at the decisions which affect his immediate or distant future as a series of "developmental tasks" which aside from preparing him for a particular situation will enable him to merge his life and his work into a meaningful union.

Central to the concept of decision process is the idea of pulsating thinking which has been described an output-feedback-output system. The individual makes a tentative commitment toward a certain course of action, receives feedback from his surroundings and peers as to the adequacy and appropriateness of his commitment, and then reshapes that commitment into a different form as he learns more about himself and his environment. This process is repeated again and again with the result of joining choice, thought, and action into a flexible and moving whole.

The performance criteria of this section are a list of some exercises by which individuals may gain personal insight into their own possible developmental tasks as achieved through pulsating thinking and tentative commitment. Our hope is that these exercises will engender in the trainee the sense of personal and situational awareness and the flexibility to make growing and developing decisions.

Criterion:

1. Basic to any decision system are the concepts of attending behavior and flexibility. An individual must be able to observe and attend to the situation before making a decision. Finally, he must decide to act on available information.

2. Judgemental Confidence ("sense of agency," Tiedeman and Dudley, 1967). The teacher trainee will demonstrate confidence in himself as a judgemental agent.

P.C. a. By maintaining an opinion when surrounded by individuals who differ from him.

Measurement:

The trainee will be placed in a variety of settings in which his judgement will be questioned. For example, he will be presented with a simple geometrical shape on a screen and asked to describe the figure. The four other individuals in the room will describe it incorrectly. The criterion will be the trainee's ability to maintain his decision under group pressure. A series of such exercises will be presented in graduated form.

Instructional Alternatives:

1. The trainee will describe a figure which is presented to him on a screen in the midst of disagreement from four others.

2. The trainee will role-play being on the witness stand and defending, under prosecutor attack, his interpretation of what happened. His opinion will differ from that of other witnesses, policemen, and prosecuting attorney.

P.C. a. By portraying a viewpoint contrary to his own in an educational debate.

Measurement:

A series of educational problems will be drawn up on controversial issues in education. The trainee will declare his position on each. One will be selected and he must prepare for a formal debate in which he defends a position contrary to his own. The criterion will be carrying out the task to the satisfaction of a debate coach or winning one out of three debates.

Instructional Alternatives:

1. The trainee will defend a position contrary to his own in a debate on educational issues.

2. The trainee will prepare for and carry out a Gestalt dialogue session in which he takes both sides of an argument. As he switches from one speaker to the other, he will change his seating position so as to face the (empty) chair of his opponent.

P.C.b. By defending his treatment of a micro-teaching class before a board of three teacher supervisors.

Measurement:

The candidate will teach a micro-teaching class with knowledge that he must defend his actions after class is over. He will be interviewed in a stress situation by the three supervisors. The criterion will be his ability to satisfy the judges that he can justify and explain his actions in a non-defensive manner without backing down unnecessarily.

Instructional Alternatives:

1. The trainee will defend his treatment of a micro-teaching class before a board of three supervisors.

2. The trainee will defend his treatment of a micro-teaching class before a board of role-playing antagonistic teacher trainees who "think they can do a better job than that."

P.C. 4. By participation in a synanon (attack therapy) group centered on reasons trainees chose teaching as their profession.

Measurement:

No formal measurement to be planned. However, it is anticipated that an informal evaluation occurs when the trainee satisfies the group that he is truly aware of his commitments to teaching and "leveling" with them. Confidence in this case is defined as the ability to reach into oneself and see the true motivations.

Instructional Alternatives:

1. The trainee will participate in a synanon group centered on reasons trainees chose teaching as their profession.

2. The trainee will prepare a script of ten forceful reasons why he chose teaching. Each sentence will start with the words "I chose . . ." and will be delivered to a group of fellow trainees. With each sentence, the trainee will pound his fist for emphasis. He will repeat the exercise, revising the list when necessary.

Criterion:

C. Decision as Process. The teacher trainee will demonstrate an intellectual awareness of decision process as opposed to decision making.

P.C. 1. By demonstrating an understanding of decision theory, gaming, pulsating thinking, career process versus career choice, and other decision related theory.

Measurement:

Standardized written examination to be passed at an established standard.

Instructional Alternatives:

1. The trainee will take a course on decision process, covering decision theory, gaming, pulsating thinking, career process.

2. The trainee will read the section of this report on Pulsating Thinking and write a free-flow meditation on his career process.

P.C. 2. By recognition of the decision inherent in procrastinating, no deciding, or not "getting involved."

Measurement:

Harvey Cox has pointed out "Not to decide is to decide." White racism, the inaction of many in Hitler's Germany, failure of poverty programs, and not helping a child in obvious need are all examples of decision by inaction. The student will write and participate in a "non-decision group" established along sensitivity training dimensions. However, this group will center on each member talking about what they haven't done rather than what they have done. The criterion will be honesty of expression as judged by the group and the leader.

Instructional Alternatives:

1. The trainee will participate in a "non-decision" group which centers on each member talking about what he hasn't done.
2. The trainee will write a paper on his non-decisions.

P.C. 3. By taking a small decision in his life and evaluating it in written form from a decision process framework.

Measurement:

In diagram form, the trainee will take a small decision, e.g., to walk on the grass rather than on a sidewalk, and enumerate as many of the factors as possible that led to that particular action at that particular time. These would include small issues such as physical space, his need to get somewhere else, etc. and large issues such as how he got where he was at the particular moment. The implications of that small action for the future (particularly if it had not been taken) will also be considered. The criterion will be the ability of the individual to see the complex interrelationships of all his decisions as determined by the reviewer of his essay.

Instructional Alternatives:

1. The trainee will center in on small decisions in a three-man discussion group.
2. The trainee will diagram a small decision and enumerate as many of the factors as possible that led to the particular action.

P.C. 4. By taking a particularly important decision in his life and evaluating it in written form from a decision process framework.

Measurement:

The individual will write an essay, perhaps in diagram form, centering around an important decision he has made (e.g., marriage, first choice of career, etc.) and will enumerate as many as possible of the factors which led up to the decision and as many as possible of the factors which the decision may lead to eventually. Important in the criterion will be the trainee's awareness that the full implications of why a decision was made or what it may lead to may never be known.

Instructional Alternatives:

1. The trainee will take an important decision in his life and evaluate it in written form from a decision process framework.
2. The trainee will discuss with a group of trainees the unknowable implications of important decisions he has made.

P.C. 5. By making a written list of the decisions he has made when teaching a five minute micro-teaching lesson.

Measurement:

He will be asked to list the decision he made following the first five minute session. He will then teach a second five minute class and again list his decisions. This second list should correspond with 90% accuracy with the list of two observers.

Instructional Alternatives:

1. The trainee will make a written list of the decisions he has made while teaching a five-minute micro-teaching lesson. He will make the list right after teaching and then view the videotape to correct the list.
2. The trainee will watch five videotapes of experienced and inexperienced teachers, making notes on the decisions made in each five-minute tape.

Criterion:

D. Deciding among alternatives. The trainee will demonstrate his ability to consider many possible alternatives to a given classroom situation and then to decide upon a course of action.

P.C.1. By being given a situation in written or video taped form and generating a minimum of 15 alternatives for action. He will then select one alternative and defend his action in writing.

Measurement:

This will be done to the satisfaction of a panel of two student (elementary or secondary) judges.

Instructional Alternatives:

1. The trainee will give his students a classroom situation in which they must decide to act and have each one of them write out a list of as many alternatives as possible while they trainee does the same. Alternatives and the difference between student-generated and teacher-generated alternatives will then be discussed.

2. The trainee will be given a situation in written or videotaped form and will generate a minimum of 15 alternatives for action.

P.C.2. By role playing alternative solutions to a problem and then deciding upon a specific course of action and trying it out in micro-teaching situation on his regular class.

Measurement:

The trainee must first reach a satisfactory (to the trainer) level of competence in role playing. He will make a video tape of his classroom trial of the alternative which will be judged a satisfactory handling of the problem by a panel of student teachers.

Instructional Alternatives:

1. The trainee will role-play alternative situational reponses to a classroom problem and choose the best one for classroom use.

2. The trainee will write out the most exaggerated, utterly fantastic set of responses to a classroom situation and adapt one for use in a micro-teaching situation.

P.C.3. By demonstrating his awareness of differences between classroom groups (e.g., American Indians, ghetto children, Westchester County, N. Y.) and showing his ability to plan the same lesson for each group.

Measurement:

The trainee will in a five minute micro-teaching session teach three types of groups the same lesson. To the satisfaction of his supervisor, he will show his ability to develop alternative methods of teaching the same material.

Instructional Alternatives:

1. The trainee will view videotapes of classroom behavior of American Indians, ghetto children, and Westchester County, N. Y. children.

2. The trainee will prepare the same lesson for the three types of groups and micro-teach the lesson to each type.

P.C. 4. By demonstrating his ability to seek advice from others.

P.C. a. Through asking other teachers how to solve key classroom problems.

Measurement:

Does the individual actually incorporate suggestions into his classroom as judged by self-report, student report, and an external observer. In addition, the trainee will supply a written rationale for his use or non-use of the advice.

Instructional Alternatives:

1. The trainee will seek the advice of three other teachers on how to solve a classroom problem and chose one suggestion to follow.

2. The trainee will ask another trainee how to get organized in studying for a course they are both taking.

P.C.b. Through meeting the performance criteria listed under "following directions" in Section III. of this proposal.

Criterion:

E. Acting positively. The trainee will engage in new behaviors with awareness of the implications. Possible new actions and behaviors for the teacher trainee are outlined throughout this proposal. As part of the decision process, the teacher trainee should express some awareness of himself and of the changes occurring in him. He will demonstrate this awareness by keeping a diary of his experiences in the human relations area and noting feelings, attitudes, and behavior changes. These will be discussed weekly with a student partner also in the human relations program.

Measurement:

Throughout the human relations trainee program, the trainee will meet with an individual supervisor to discuss his progress through the program. An individualized program of activities and achievements will be selected during the program . . . the overall criterion to be does the student meet these criteria. An equally important criterion will be changes in the students self-perception and actions as verified by the student, the supervisor, and an external observer.

Instructional Alternatives:

1. The trainee will keep a diary of the "positive acts" he does each day, noting which are behavior changes.

2. The trainee will meet with his supervisor and discuss where he feels he is failing in the human relations program. Both trainee and supervisor will adjourn to separate rooms, writing down behavior changes needed. They will then compare their solutions and trainee will decide on course of action.

Section III. Interpersonal System

The fully functioning individual must be able to understand and work with others in a variety of social settings. He should be able to function in two person relationships, small groups, classrooms, and in complex organizations.

Undergirding ability to work with others are the personal-emotional, physiological, and non-verbal skills described in Sections I and II.

This section focuses on general application of previously learned skills as they may relate to a variety of interpersonal situations. Relations with others and social skills are viewed as consisting of five primary factors in addition to the underlying factors in the above paragraph:

1. Following direction of a leader.
2. Sharing ideas and feelings.
3. Working with others on a direct, mutual basis.
4. Serving as a leader.
5. Recognizing and deciding when to take a leadership, mutual or follower role.

Two areas of social functioning, racial relations and sexual awareness, have been selected for special emphasis in teacher training. While we believe that the information and skills provided through achievement of human relations performance criteria may be sufficient to solve these human problems, detailed performance criteria may prove helpful in developing fuller understanding. This same approach may eventually be used later in the development of new areas of study concerning other important human problems such as career choice, dealing with aggression and anger, or understanding another culture.

I. Dyadic Interactions

A. General Criterion: The teacher trainee will demonstrate his ability to follow directions in a dyadic situation by:

1. Performance Criterion: Reproducing a geometric figure as told orally by another.

Measurement:

This figure must exactly resemble the original.

Instructional Alternatives:

1. The trainee will reproduce a geometric figure as told orally by another.

2. The trainee will observe another trainee reproduce a geometric figure as told orally by another.

2. Performance Criterion: Performing physical or non-verbal exercises as demonstrated by the other without words.

Measurement:

The trainee must perform this to the satisfaction of the trainer and an external observer.

Instructional Alternatives:

1. The trainee will practice performing physical or non-verbal exercises as demonstrated by the other without words.

2. The trainee will analyze the process of one trainee leading another in physical and non-verbal exercises.

3. Performance Criterion: By completing a series of complex tasks as directed by the other. (e.g., building a model boat under the oral direction of the other, engaging in a new social activity or sport for the first time, etc.)

Measurement:

Completion of the task or engaging in the new activity to the satisfaction of the other party in the yard.

Instructional Alternatives:

1. The trainee will practice completing a series of simple tasks as directed by the other.

2. The trainee will devise a series of complex tasks and have another person direct his completion of these tasks.

4. Performance Criterion: Passing on complex oral directions given him by the leader to another individual.

Measurement:

The individual will restate accurately the directions to the leader to see if the second member of the dyad was able to maintain both understanding and an ability to pass the information on.

Instructional Alternatives:

1. The trainee will practice passing on complex oral directions given him by the leader to another person.

2. The trainee will take complex oral directions from a videotape and pass them on to another individual.

B. General Criterion: The teacher trainee will demonstrate his ability to share his ideas and feelings in a dyadic situation by:

1. Performance Criterion: Setting up a specific behavioral goal for change in personal behavior and then going through personal counseling.

Measurement:

The counselor and client will agree on a goal of behavior change. The counselor, client, and one external observer in the client's environment must all agree that the behavior in question has changed.

Instructional Alternatives:

1. The trainee will set up a specific behavioral goal for change in personal behavior and go through two personal counseling sessions.

2. The trainee will set a behavioral goal for another person in his environment and try to change his behavior through personal contact.

2. Performance Criterion: Serving as a counselee in a micro-counseling situation and sharing his feelings and ideas in response to counseling interests. (Note: it is possible to set up a micro-teaching program in which trainee learns how to share feelings with a counselor.)

Measurement:

A micro-teaching program in sharing of feelings and ideas will be developed. Rating scales to determine extent to which the trainee can share his feelings and ideas will be constructed. Appropriate criterion levels will be established.

Instructional Alternatives:

1. The trainee will practice the sharing of ideas and feelings in a counseling situation with a trained counselor.

2. The trainee will micro-teach a class of five for ten minutes in which the topic is the feelings the students and trainee have about police brutality.

3. Performance Criterion: Describing a personal experience to another so that the other fully understands how the trainee really felt and thought during the experience. (It may be observed that this is the converse of empathy . . . can the individual share of himself sufficiently so another can understand him. Many empathic people find it difficult to share their own feelings with others.)

Measurement:

When we measure constructs approaching empathy, we feel we must rely on self-report. The criterion here will be that the trainee believes the other understands him the other feels he understands the trainee, and external observers of a video tape must believe communication has been achieved. (Ratings of tapes by Higgins, Ivey, and Uhlemann, 1968 reveal that adquate reliability can be achieved by this method.)

Instructional Alternatives:

1. The trainee will practice describing a personal experience to another so the other fully understands how the trainee really felt and thought during the experience.

2. The trainee will view the filmstrip "Members One of Another."

4. Performance Criterion: Entering long-term analytic, Rogerian, or therapy.

Measurement: None planned.

Instructional Alternatives: None planned.

C. General Criterion: The teacher trainee will demonstrate his ability to work with others on a mutual basis through:

1. Solving a problem with another person (e.g., writing a paper together, building a model, developing a classroom unit which is to be taught together, etc.). Coupled with

this experience will be a diary of feelings and attitudes which the two individuals share at the conclusion of the project.

Measurement:

The student must work on this area until he demonstrates his ability to work effectively with another person toward a goal. The criteria to be: (1) is the project completed within a reasonable length of time; (2) is the project worthwhile; (3) comparison of the diaries of the two during the project with the aid of an experienced counselor.

Instructional Alternatives:

1. The trainee will develop a classroom unit with another person and teach it with him, keeping diaries and sharing them at the end.

2. The trainee will spend a summer working at a small group camp in which he co-leads a small group with another leader.

2. Performance Criterion: Relating with another person on a direct, mutual basis in a five-minute micro-teaching session in human relations. (Higgins, Ivey, Uhlemann, 1968).

Measurement:

Ability to relate on a direct, mutual, basis as rated by (1) semantic differential estimates of the relationship and (2) observer ratings on the scale developed by Higgin, Ivey and Uhlemann, 1968. The pair must achieve a total rating of 20 or better.

Instructional Alternatives:

1. The trainee will read Higgins, Ivey, Uhlemann, 1968.

2. The trainee will practice relating with another person on a direct, mutual basis in a five-minute micro-teaching session in human relations and examine his Higgins, Ivey, Uhlemann ratings with his supervisor.

D. General Criterion: The teacher trainee will demonstrate his ability to lead a dyadic relationship by leading another in the activities described in 1 A. The criterion for his success will be the success of the person he trains.

1. Performance Criterion: Serve as a counselor in a five-minute micro-counseling session and demonstrate the skills of attending behavior, reflection of feeling, and selective attention.

Measurement:

He will achieve success in these skills as measured by improved client ratings on the Counselor Evaluation Scale (Ivey, Normington, Miller, Morril, Haase, In Press) and achieve a satisfactory standard on ratings scales developed in micro-counseling.

Instructional Alternatives:

1. The trainee will observe a film of model counselor demonstrating the skills of attending behavior, reflection of feeling, and selective attention.

2. The trainee will practice the above skills in a five-minute micro-counseling session.

2. Performance Criterion: Help a client set up a behavior change goal in a personal counseling session and then counsel the client until that goal is achieved.

Measurement:

The counselor and client will agree on a goal of behavior change. The counselor, client, and one external observer in the client's environment must all agree that the behavior in question has changed.

Instructional Alternatives:

1. The trainee will observe a model counselor on videotape go through the process of setting up a behavior change goal and counseling the client until that goal is achieved.

2. The trainee will practice helping a client set up a behavior change goal in a personal counseling session and then counseling the client until that goal is achieved.

E. General Criterion: The teacher trainee will demonstrate his ability to use direction taking, sharing of experience, mutual behavior, and leadership interchangeably in dyadic interaction by:

1. Performance Criterion:

Role playing dimensions of marital, business, school, and other decision making processes and using interchangeable roles roles. Important here will be the ability of the individual to change roles (role-reversal) in the midst of role playing.

Measurement:

The role playing sessions will be video taped and the role playing trainer will determine whether or not the trainee was able to play the roles to a satisfactory level.

Instructional Alternatives:

1. The trainee will micro-teach a five-minute lesson in which he demonstrates his ability to use direction taking, sharing of experience, mutual behavior, and leadership interchangeably.

2. The trainee will role-play an argument with a roommate. He will review the videotape and analyze the interactions in terms of the four dimensions listed above. The trainee will then role-play a conversation with a friend he hasn't seen for a long time, again review the videotape, and analyze the interaction.

2. Performance Criterion: Being given a complex problem to solve with another person. The two individuals will be selected so that each individual has skills the other lacks and must depend on one another to take different roles.

Measurement:

The pair will meet with a trained counselor who will discuss their relationship with them. Some evaluation feedback on level of their understanding of one another and ability to change roles will be given. Formal evaluation, however, is not planned.

Instructional Alternatives:

1. The trainee will chose an imaginary complex problem and imaginary partner and fantacize in two sessions the best possible and worst possible experiences they would have together.

2. The trainee will be given a complex problem to solve with another person and evaluated on their working together by a trained counselor.

3. Performance Criterion: By self-report on his ability to take different roles in real life situations such as marriage, school, dating, etc.

Measurement:

The trainee will report his changes in behavior to a counselor or significant person the teacher trainee program. His self-report must be verified by another individual in his environment (wife, family, roommate).

Instructional Alternatives:

1. The trainee will write down the different roles he plays in marriage, school, family, business, etc. and experiment with these during a one-week period.

2. The trainee will make a self-report on his behavior changes to a "significant other" in the trainee program.

II. Small Group Interaction

A. General Criterion: The teacher trainee will demonstrate his ability to follow directions in a small group by:

P.C. 1. Performing physical exercises in harmony with the group as directed by the leader both verbally and non-verbally.

Measurement:

Evaluation of the group leader that the individual has achieved a satisfactory level of competence and ease. In some cases, improvement in coordination will be considered a satisfactory standard.

Instructional Alternatives:

1. The trainee will listen to a record with a small group on which the voice directs them to perform physical exercises.

2. The trainee will perform physical exercises in harmony with the group as directed by the leader both verbally and non-verbally.

P.C.2. By serving on a sports team as directed by a leader (e.g., modern dance, basketball, unison swimming, etc.)

Measurement:

Evaluation of the group leader that the individual has achieved a satisfactory level of competence and ease. In some cases, improvement in coordination will be considered a satisfactory standard.

Instructional Alternatives:

1. The trainee will serve on a sports team as directed by a leader.

2. The trainee will lead a sports team.

3. Performance Criterion: By working on a team to solve a problem as directed by a leader (developing a class curriculum painting a mural, planning and participating in a party, etc.)

Measurement:

Video tapes will be taken of selected portions of the group experience. The trainee's ability to follow directions, work cooperatively, under a leader will be noted and these observations will be returned to him. Criterion: Can the individual work in a group to the satisfaction of the leader.

Instructional Alternatives:

1. The trainee will organize a team work project in his home - with wife, sons, roommates -- and evaluate the work of everyone including himself.

2. The trainee will work on a team to solve the problem of disciplining a school class.

4. Performance Criterion: Learning a new task with others who also have not learned the task.

Measurement:

Does he actually learn the new task as evaluated by the group leader.

Instructional Alternatives:

1. The trainee will watch a videotape of a group of novices learning a new group-task.

2. The trainee will learn a new task with others who also have not learned the task.

B. General Criterion: The teacher trainee will share his ideas and feelings in a small group situation by:

P.C. 1. Describing a personal experience to the group so that they all fully understand it and how the trainee really felt and thought during the experience.

P.C. 2. Being deliberately frustrated by the group and after the experience sharing with them his feelings of frustration.

P.C. 3. Sharing himself with other in an unstructured sensitivity training or programmed group.

Measurement:

Rating of an individual's participation in the group by ratings of video tapes on the Hill Interaction Matrix. Ratings of the individual's participation in the group by other group members.

Instructional Alternatives:

1. The trainee will participate in an unstructured sensitivity training group.
2. The trainee will describe a personal experience to the group and be videotaped. He and a counselor will go over the tape and the counselor will reinforce him for revealing deep thoughts and feelings. The trainee will describe the personal experience to the group again.

4. Performance Criterion: Describing to others his feelings following a psychodrama session.

Measurement:

Describing his feelings to the satisfaction of other participants. This will be done informally following his session. A satisfactory criterion level will be general agreement on the part of the trainee, other group members, and the psychodrama leader on the accuracy of his report.

Instructional Alternatives:

1. The trainee will describe to others his feelings following a psychodrama session.
2. The description of the trainee will be videotaped, played back to him in the presence of the psychodrama leader who will compare interpretations and "gut reactions" with trainee. He will then participate in psychodrama again and describe to others his feelings.

5. Performance Criterion: By participating in an on-going long-term psychotherapeutic group.

Measurement: No evaluation planned.

Instructional Alternatives:

No evaluation planned.

6. Performance Criterion: By developing innovative ideas in a brainstorming session designed to solve a unique problem (e.g., how might we set up an ideal society on the moon).

Measurement:

The trainee will participate in three sessions. The number of his ideas given orally should increase over the three sessions. Quality of ideas will not be evaluated at this point or could be evaluated independently.

Instructional Alternatives:

1. The trainee will participate in two brainstorming sessions which are centered on a unique problem.
2. The trainee will brainstorm on his own by writing down a problem to be solved and then writing down, in steady stream, the ideas that come to him.

7. Performance Criterion: Participating in a Gestalt dream session and working through the ideas and feelings associated with his dreams.

Measurement:

No evaluation planned.

Instructional Alternatives:

No evaluation planned.

C. General Criterion: The teacher trainee will desmonstrate his ability to participate on a direct, mutual basis by:

P.C. 1. Solving a problem with a leaderless small group. (Planning a curriculum, building a campsite, surviving a variety of small group unstructured situations.)

Measurement:

Having solved the problem, the members of the leaderless group will write summary diaries of their experiences, feelings, and impressions. These will be video-taped and distributed to other group members. The group will meet in session with a leader and discuss in sensitivity group fashion their reactions to the experience. There is no specific criterion planned at this time, although experience may lead to more precise behavioral goals.

Instructional Alternatives:

1. The trainee will solve a problem with a leaderless small group.

2. The trainee will go to a leaderless BE-IN and write a diary about his feelings of non-structure.

2. Performance Criterion: Participating in a T-group or sensitivity training session, programmed group, or related exercise.

Measurement:

Self-concept measures before and after the group. In behavioral oriented groups, each member will set up a specific behavior change goal and the criterion will be whether or not the behavior actually does change by self and other report. Programmed groups offer excellent opportunities for programmed behavioral change.

Instructional Alternatives:

1. The trainee will participate in an unstructured T-group.
2. The trainee will participate in a programmed behavioral change group.

3. Performance Criterion: Participation in non-verbal exercises as described elsewhere.

4. Performance Criterion: Active participation in psychodrama, fantasy sessions, Gestalt exercises, ahtletics, method drama, gaming and simulation activities to his own and others satisfaction.

Measurement:

Here we are simply looking for participation. Important will be the individual's self-report and enthusiasm and enjoyment. In some cases, two fellow students will meet with the trainee and the leader after the experience and they will compare impressions of the trainee's participation in the group. The criterion will be the degree of agreement of their perceptions with that of the trainee.

Instructional Alternatives:

1. The trainee will participate in fantasy sessions in which a group problem is solved through the generation of fantasies about it.

2. The trainee will participate in method drama and "rap" about it afterward with two students and the leader.

D. General Criterion: The teacher trainee will demonstrate his ability to act as a leader in a small group by:

P.C. 1. Leading the activities described in II.A and II.B.

Measurement:

By the achievement of the members of the leader's group.

Instructional Alternatives:

See Instructional Alternatives for II.A and II.B.

2. Performance Criterion: Organizing his own small group and taking them through to solve a specific problem. (e.g., Cub Scouts, problem in the School of Education, etc.)

Measurement:

The leader will keep a diary of his leadership experience and through discussion of his diary with a trainer will exhibit satisfactory (to the trainer) democratic group leadership ability and the trainee will rate himself as he thinks the group sees him. A criterion will be the degree of correspondence between the trainee's and the group members' ratings.

Instructional Alternatives:

1. The trainee will write a story of a past experience in small group leadership.

2. The trainee will organize his own small group to accomplish some specific task in his community (set up a Better Business Bureau, study the extent and type of Negro history in schools).

E. General Criterion: The teacher trainee will demonstrate his ability to use direction taking, sharing of experience, mutual behavior, and leadership interchangeably in small group interaction by:

P.C. 1. Participating in a leaderless group who role play or use psychodrama to work through a variety of family, educational, business, or social situations.

P.C. 2. Participating in a leaderless group who are given a specific problem to solve.

P.C. 3. By participating in a leaderless T-group.

Measurement:

A combination of procedures mentioned previously; self-report contrasted with perceptions of others, semantic differential or other scales both pre and post, two group members confronting the one member, directly observable behavioral change, Flanders Interaction Analysis, Hill Interaction Matrix.

Instructional Alternatives:

1. The trainee will participate in a leaderless group and consciously try to interchange the four styles of relationship.
2. The trainee will participate in four leaderless groups. In each one, he will consciously attempt to adopt one of the four criterion styles until he has tried all four.

4. Performance Criterion: By self-report on his ability to take different roles in real life situations such as class projects, family, etc.

Measurement:

Self-report of behavioral change will be verified by an independent external observer.

Instructional Alternatives:

1. The trainee will devise an alias, with personality characteristics much different from his own, and play that alias for two weeks. He will then report the experience to a supervisor, and bring the diary which he kept.
2. The trainee will ask the independent external observer (someone he knows fairly well) to watch a confrontation in which the trainee is going to change his previous behavior.

III. Classroom Interaction

A. General Criterion: Let us assume that teacher trainees having survived the traditional educational framework thus far have already learned (alas, too well!) the skills of following classroom directions. A few additional skills are suggested related following directions in a classroom situation:

P.C. 1. The teacher trainee will write an autobiography in which he describes his educational history and his reactions to directions given him.

Measurement:

The autobiography will be evaluated by a counselor and one other student as to the richness, sensitivity, and awareness of the detail. The evaluation here is planned as subjective with the hope that the teacher trainee will become more aware of himself and his reactions to education.

Instructional Alternatives:

1. The trainee will role-play giving "teacherly" directions to a group of trainees.

2. The trainee will view a videotape of five different teachers giving directions to a class and describe his reactions to the directions given him.

2. Performance Criterion: The teacher trainee will observe himself and his own reactions to directions given him in a classroom situation. His own feelings about his educational experience will form an important factor in our consideration of classroom interaction.

Measurement:

This is an introspective exercise and evaluation can only be subjective. The teacher trainee will discuss his feelings about directions and authority with a counselor. The criterion will be (1) improved attitudes and relationship with authority as observed by self and an external observer, (2) increased awareness of past relationships with authority as determined by self-report and counselor-report.

Instructional Alternatives:

1. The trainee will discuss his relationship to authority figures in educational roles in an intensive group counseling setting.

2. The trainee will be videotaped without him suspecting it in two classrooms in which he is being given directions. These tapes will be shown to the student if he wishes. Otherwise, they will be destroyed and no one will view them.

B. General Criterion: The teacher trainee will demonstrate his ability to share his ideas and feelings in a classroom situation by:

1. Performance Criterion: Describing his personal experience to a class so that they fully understand it.

Measurement:

Prior to describing the experience the teacher will have completed a written summary. Pupils' written summaries of the teacher's experience as they heard it will be compared with the teacher's written summary. The criterion is the degree of similarity between teacher and pupil summaries.

Instructional Alternatives:

1. The trainee will write a summary of a personal experience, describe the experience in class, and have the students write summaries afterward. He will then compare his summary and the pupil summaries with a fellow trainee.

2. The trainee will observe a fellow trainee go through alternative (1) and help his fellow trainee evaluate the summaries.

2. Performance Criterion: Describing to a micro-teaching class his feelings about a just completed 5 minute micro-teaching session.

Measurement:

The criterion again is amount of pupil understanding of the trainee's feelings about teaching. This will be measured by a semantic differential test with adjectives under the heading "*attitude toward teacher.*" The pupils will try to rate the S.D. scale as they imagine the teacher filled it out. This approach has been used recently in a micro-counseling research program successfully.

Instructional Alternatives:

1. The trainee will describe to a micro-teaching class his feelings about a just completed 5 minute micro-teaching session.

2. The supervisor will interrupt the teacher as he goes through alternative (1), probing him to reveal more and asking the students for feedback. The trainee will then teach the same class another 5-minute lesson, describe his feelings to the class, and ask them for feedback.

3. Performance Criterion: Describing his feelings about practice teaching to his supervisor.

Measurement:

A video tape of the supervision session will be made. Another supervisor will view the video tape and interview both trainee and supervisor about how they felt about the interview. The criterion will be improved trainee-supervisor clearness of communication through three video taped sessions as determined by the external new supervisor. (Note: this interrogation session is modeled after the Interpersonal Recall Technique of Kagan (1967).)

Instructional Alternatives:

1. The trainee will observe videotaped communication between practice teachers describing their feelings about teaching and supervisors. The last videotape will be a good model.

2. The trainee will describe his feelings about practice teaching to his supervisor, using some of the relaxation techniques alone for fifteen minutes beforehand.

C. General Criterion: The teacher trainee will demonstrate ability to work with his class on a direct, mutual basis through:

P.C. 1. Giving a micro-teaching class or regular class a problem to solve for which the teacher himself has no answer. He will participate as a member of the class during this period.

Measurement:

A fellow student teacher will observe the class and score the teacher's comments on the Flanders Interaction Scale or Hill Interaction Matrix. The criterion will be the teacher's ability to engage in mutual behavior as an equal with his class.

Instructional Alternatives:

1. The trainee will sit at a regular student desk in his class for a whole day and engage in problem-solving with the class. Videotaped portions of the class-day will be played back in the presence of a supervisor who will reinforce the trainee for mutual behavior.

2. The trainee will read Rogers' On Becoming a Person, pg. 297-313, and discuss with fellow trainees the ways of operationalizing this approach on an elementary level.

2. Performance Criterion: Participating in a sensitivity session with his class, run by an experienced counselor.

Measurement:

None planned. Simply going through this exercise represents meeting criterion. T-group evaluation techniques suggested earlier such as semantic differential or interviewing members of the class to gain their perceptions of the teacher are possible evaluation techniques.

Instructional Alternatives:

None planned.

3. Performance Criterion: Participating as an active member of the class in psychodrama, Gestalt exercises, etc.

P.C. 4. Allowing a student to teach the class and the teacher trainee acts as a student in his own classroom.

Measurement:

Similar measurement and criterion measures as the three preceeding suggestions.

Instructional Alternatives:

1. The trainee will read Schutz, Joy, and participate with the class in doing some of the less-sophisticated exercises. Especially good are the rock-and-roll, the falling-back on each other, and the neck-roll.

2. The trainee will allow student to teach the class. Supervisor will observe teacher adaptation to the role of student and share his reactions afterward. Students will also be asked to evaluate what kind of "student" the teacher was.

5. Performance Criterion: Allowing his practice teaching class to help plan classroom activities.

Measurement:

A scale designed to obtain student ratings of their teacher's willingness and ability to allow them to participate in class decisions and planning will be developed. A criterion level for student participation in classroom planning will be established.

Instructional Alternatives:

1. The trainee will research on a personal basis the ways in which experienced and inexperienced teachers allow their students to plan activities.

2. The trainee will allow his practice teaching class to help plan classroom activities twice a week for two weeks and then have the students rate him on ability to involve students in planning.

D. General Criterion: The teacher trainee will demonstrate his ability to work with his class as a leader through experience in micro-teaching, practice teaching, etc. In addition, the teacher trainee will:

1. Maintain a log of his feelings and attitudes toward teaching and share this with his supervisor.

Measurement:

In the early stages, a relatively undemanding criterion will be established. Can the teacher trainee describe feelings and actitudes as opposed to concrete facts and events. This criterion will be evaluated by the supervisor.

Instructional Alternatives:

1. The trainee will tape record his feelings about each day in class immediately after the class ends. After a week, he and a supervisor will go over the tape.
2. The trainee will maintain a practice log of his feelings about teaching in which every sentence starts with "I felt..." or "I thought that..."

2. Performance Criterion: Discuss with fellow teachers his attitudes toward teaching. Especially important here is his own ability to share with others some of his questions and to discuss areas where he feels himself less effective.

Measurement:

A sensitivity group centered on feelings and attitudes of teachers will be established. Following a session, teacher trainees will meet in groups of three with the T-group leader. The criterion to be worked on will be the degree of correspondence between self-report of the teacher trainee and the observations of the two other trainees in the group and the leader.

Instructional Alternatives:

1. The trainee will participate in a six-member sensitivity group which listens to tapes of classes in action and shares reactions to both the teaching and the learning experience. A Rogerian group counselor is needed to lead.
2. The trainee will write out ten responses to the question "Where do I fail in teaching..."

E. General Criterion: The teacher trainee will demonstrate his ability to use direction giving, sharing of experience, mutual behavior, and leadership behavior interchangeably in classroom interaction by:

P.C. 1. Participating in a leaderless class (no professor). The class will develop its own purpose, curriculum, and grading system.

Measurement:

This will be established in the model of the National Training Laboratories Educational Workshops except that no leader will be present. Student teachers will be divided into groups of 10 and given three days to develop the materials above. Evaluation will be by both the group's product and a diary of the group (both individual and group) throughout their sessions.

Instructional Alternatives:

1. The trainee will participate in a leaderless class.
2. The trainee will describe in writing his interaction in the class which displays the four types of classroom styles described in the criterion.

2. Performance Criterion: Participating with a micro-teaching class of 30 minutes duration and switching roles from a leader to a follower during that period.

Measurement:

The class will be video taped and trained raters will determine the number of times and percent of time the trainee spends in leader, follower, or mutual roles with his class. The criterion will be the ability of the teacher to consciously change roles six times during the half hour.

Instructional Alternatives:

1. The trainee will observe a videotape of another teacher demonstrating role-switching six times during a half-hour.
2. The trainee will practice participating with a micro-teaching class of 30-minutes duration and switching roles from leader to mutual to follower twice during that time. He will view his videotape with a supervisor who will calculate the number of times and points of time trainee spent in three roles and point out good switching points of which trainee took advantage.

3. Performance Criterion: The teacher trainee will show ability to change roles in a regular classroom.

Measurement:

Portions of the class will be video taped by the teacher and evaluated by his practice teacher to the satisfaction of the practice teacher. A secondary criterion could be the perception of the trainee's students as measured by the Teacher's Role Taking Questionnaire (to be developed).

Instructional Alternatives:

1. The trainee will observe the videotapes of model teachers demonstrating their ability to change roles.
2. The trainee will describe in free-verse or meditation form the different feelings of relationship he has had in classroom situations. Expeically relevant are feelings of being "out of control" or "that guy knows more about science than I do."

IV. Organizational Patterns. The teacher trainee will be expected to participate in organizations and organizational decisions. He should show awareness of the structure and functioning of organizations and his roles in them. The performance criteria associated with dyadic, small group, and classroom interactions are, of course, vital to organizational functioning and many of the skills associated with these previously discussed performance criteria would be useful in participation in organizations.

A. General Criterion: A teacher trainee will demonstrate his knowledge of organizations by:

P.C. 1. Developing an organizational chart of a school system with functional descriptions of positions.

Measurement:

This chart will be designed to satisfy the requirements established by: (1) the school principal or superintendent; and (2) an expert in organizational structure or theory.

Instructional Alternatives:

1. The trainee will develop organizational charts of two school systems with functional descriptions of positions and have a short course in organizational structure from an expert, based on the charts which the trainees developed.
2. The trainee will serve as an administrative intern in a school

system, developing the chart at the end of his period of service.

2. Performance Criterion: Restructuring an organization to better reach its basic objectives.

Measurement:

The trainee will be given a written summary of an organization (school, P.T.A., business) coupled with administrative problems associated with that organization and will develop a restructuring of personnel and positions to achieve the goals of the organization more satisfactorily.

Instructional Alternatives:

1. The trainee will watch the 28 films in the Innovations in Education series by Dwight Allen.
2. The trainee will restructure an organization to better reach its basic objectives.

3. Performance Criterion: Serving as an administrative intern in a school system.

Measurement:

The prospective teacher will be placed for a two week period in a school system and will observe the administrative functioning of the school. A written report of this experience will be developed to the satisfaction of the school and the trainee's school supervisor.

Instructional Alternatives:

1. The trainee will serve as an administrative intern in a school system.
2. The trainee will serve as an administrative intern in a mental hospital or prison and will compare this report of his experience with that of the school system, centering on the topic of the exercise of authority by teachers, nurses, and guards.

B. General Criterion: The teacher will participate in organizational planning in a model session.

Measurement and operation:

Again, this will be established in the model of the National

Training Laboratories Educational Workshops. No leaders will be present and 40 students will participate in four groups of ten to develop a new organization for the school. Each group will develop their own organization and then will meet with another group to develop a joint organization (a new school organization, a flight to the moon, etc.) The two groups of 20 trainees will make a formal presentation to a three man board (a teacher trainer, school superintendent, and a school board member) who will judge which presentation is most effective.

The criterion for this experience could exist at several levels. Each participant could be evaluated by any of many techniques previously suggested. Emphasis would be on his ability to participate both as a leader and follower in each of three situations (small group, two group situation, and in the four goups gathered together). The groups themselves could be evaluated.

Insgtructional Alternatives:

1. The trainee will participate in the model session established along the lines of NTL Educational Workshops.
2. The trainee will participate in an organizational planning session set up by Synectics, Inc.

C. General Criterion: Further, organizational performance criteria could be developed in connection with administrative theory in the schools.

E. Specific Issues

Sexual Awareness

Relatively few people in our society receive enlightened sexual instruction. Our prospective teachers have learned about sex most often through gutter talk, "dirty" jokes, and shared misinformation. They have also learned sex by omission from teachers and parents who avoid or are embarrassed by sexual topics. This lack of willingness to look frankly at sex is a major force leading our society toward distorted attitudes. Finally, when sex is taught on a more sophisticated level, it tends to a "plumbing" or "marriage manual" approach centered on anatomy and sexual technique.

As a result our basic sexuality has been divorced from our real selves, compartmentalized, and all too often separated from love and life. We are full of "hang-ups," misinformation, and can't even talk about the subject. The premise of this set of performance criteria is that sex and sexuality are a normal part of full life. Our general objectives for these performance criteria might stated as follows:

The teacher trainee will demonstrate an awareness of sex and sexuality. He will know basic facts about sex. He will have an awareness of some of the primary issues of sexuality and be able to discuss them without undue embarrassment. He will understand and appreciate traditional moral values and how they were developed. He will understand and be proud of his own body. He will view sexuality as a gift of life and not as a special "problem" to be "solved."

Mary Calderone of SEICUS has pointed out that "Sex is what you are, not what you do." We are interested in producing teachers who realize that they are sexual beings and are not ashamed of it. Performance criteria are aimed at making sexuality a natural spontaneous experience within normal cultural expectations.

1. Sexual knowledge

P.C. a. The teacher trainee will demonstrate a knowledge of sex facts (anatomy, sexual functioning).

Measurement: Standardized test of sexual knowledge.
Instructional Alternatives:
The teacher trainee will read the relevant passages on anatomy and sexual functioning in Masters and Johnson's Human Sexual Response.

The teacher trainee will analytically consider his own body in light of Human Sexual Response.

P.C. b. The trainee will demonstrate knowledge of cultural attitudes toward sex.

Measurement: The trainee will take a course, programmed text, or undertake independent reading into patterns of sexual conduct in several societies. He will write a paper comparing and contrasting the attitudes and practices of one culture with those of contemporary American culture. He will demonstrate the ability to use anthropological terminology and structure in his report.
Instructional Alternatives:
The teacher trainee will participate in a culturally mixed (e.g. black and white, or white and Oriental) discussion group concerned with understanding each others' sexual attitudes.

The teacher trainee will write a report on the cultural differences he discovered in the above-described discussion group.

P.C.c. The teacher trainee will teach a five minute micro-teaching lesson on a sexual topic.

Measurement: Ratings scales will be developed and scored by the students themselves and an external observer from the

community (minister, parent, etc.) not immediately associated with the schools.
Instructional Alternatives:
The teacher trainee will create and justify a rating scale on teacher effectiveness in communicating on a sexual topic.

The teacher trainee will consider the differences the rating scales he created and the scales created by the students, and consider the basis for those differences.

P.C. d. The trainee will demonstrate knowledge of varied American attitudes toward sex and sexuality.

Measurement: The trainee will read marriage manuals on sex which emphasize only physical functioning, selections from religious readings, selected paperback books once considered pornographic, and readings such as those of SEICUS which emphasize sexuality as maleness and femaleness and do not restrict sex to the sex act. He will write an essay evaluating these varied approaches to sex and discuss it in a mixed group. The criterion will be the clarity of his ideas and his ability to present them clearly.

2. Physical Awareness of Sexuality.

Rationale: We have been impressed by the Gestalt therapists, the work of Lowen (1967), and Esalen Institute who are demonstrating with increased clarity the relationship of smoothly flowing body to smoothly flowing interpersonal relationships Ours is a society which does not pay much attention to physical development (except for highly tuned athletes) and touching another person is forbidden. Hall in the Silent Language, Lowen in Physical Dynamics of Character Structure (1958), and Schutz in Joy are three who illustrate the prime importance of physical awareness within cultural, interpersonal functioning.

Sensory awareness, Gestalt exercises, training and other physical exercises have been included elsewhere in the human relations section. The fully functioning person is not only aware of the facts of sex, but also is proud of his body, can move it freely, can be close or distant from another person.
Instructional Alternatives:
The teacher trainee will participate in an Esalen-type seminar, or series of seminars, which centers on the freeing of the body and its sexuality.

The teacher training will teach a ten-minute micro-teaching lesson on the discoveries he made in the above described seminar(s), noting especially that part of his understanding that is significantly non-verbal.

3. Sex as Relationship

Reationale: A person's sexuality is most fully expressed in a relationship. This does not mean that sex is expressed in the sexual act only; sex can be part of the basis for a meaningful relationship between friends, between two men hunting, or two women sewing. It can. Sex is expressed most fully between those of opposite sex. Sexuality does not mean sexual contact, it means respect and honor for both self and other. Thus one can respect a woman as a woman, but not becoming involved with her sexually. The all too typical situation in our society where married men and women separate at dinner parties is all too common. Men and women should be able to mix naturally as men and women without fear of sexual daliance. A sexual "affair" in the traditional sense of the word does not represent a relationship, it is simply a physical act.

When sex is viewed as relationship, the concept is broadened and physical intimacy while important is not necessarily the central focus.

P.C. 1. The teacher trainee will discuss various sexual topics in a mixed group.

Measurement: The criterion will be the trainee's ability to discuss topics without embarrassment as measured by his self-report and observation of others in his group including the leader.

Instructional Alternatives:
The teacher trainee will give a backrub to a male acquaintance and then to a female, and then shall essay his own differences in response, and the reasons for those differences.

The teacher trainee will teach a ten-minute long micro-teaching lesson on homosexuality, concerning himself primarily with emphasizing American misunderstandgs about homosexual physical contact (not sexual "affairs" but rather backslapping, arm-around-each-other, women kissing women on the cheek, etc.).

P.C. 2. The teacher trainee will observe a video taped classroom and note sexual characteristics and interplay of students. These sexual characteristics will be defined broadly to include typical mannerisms of men and women, how boys and girls interact, and the various physical differences among the students. The students will report these observations in written form to be compared with the observations of other students and experts.

Measurement: The video tapes will be coded into categories of relationships and students will achieve an 80% agreement with the coded categories.

Instructional Alternatives: The teacher trainee will consider why his observance of the video tape differed from other students' and experts', and shall essay what those differences indicate about the respective observers.

The teacher trainee will essay why the students in the tape manifest sexual characteristics in ways they might not when they are older, and shall consider why he can predict the changes. e.g. changes in codes of acceptable behavior.

P.C. 3. The trainee will enter either a group or individual therapeutic experience with a qualified counselor that focuses on sexual attitudes and physical awareness of personal sexuality.

Measurement: If the program is a group program the other participants will rate the trainee as having participated fully and honestly in the group. If the program is that of individual counseling, the counselor should not be required to rate the individual because of ethical considerations, but the student should participate in a minimum of ten counseling sessions with the same counselor.
Instructional Alternatives:
The teacher trainee will essay how his response to his contemporaries has changed as a result of the therapy and/or counselling.

The teacher trainee will essay how his sexual responses, here referring to intercourse, masturbation, etc., have changed.

P.C. 4. The married student will work out, with his wife, a series of discussions of their sexual relationship. The discussions may be independent or with a marriage counselor.

Measurement: The student will evaluate, in a confidential interview with a counselor, his sexual relationships in marriage. No evaluation by the counselor may be made because of ethical considerations.
Instructional Alternatives:
The teacher trainee will discuss with another teacher trainee the changes that this entire program has effected in their lives.

The teacher trainee will consider ways that he might facilitate his wife's freeing herself from the type of "Hang-ups" that he has realized during his counselling sessions.

Race Relations

A. Rationale

1. Humanity of both black and white is re-affirmed in the face of political hatreds.

2. Situation of fear exists in white communities; understanding and love can overcome that fear, along with behavioral change of whites articulating fear of physical harm by blacks.

3. Black Power, Black Unity, and Black Awareness are greatly misunderstood by press and politicians and teachers who have had no direct contact with black students.

4. Out of our collective guilt arises a social responsibility to learn about Black America, its culture and history, and to teach the facts and the responsibility to whites.

B. Interpersonal Performance Criteria

P.C. 1. Both black and white teachers able to speak openly and comfortably about black power, civil rights, and various white reactions.

a. To say "black power," "militants," "nigger," "honky," "racist," in a racially-mixed group without physical uneasiness.

b. To ask questions openly about the language (idioms) of black culture and white culture of the students themselves.

Measurement: A sensitivity group centering around race relations will be videotaped during the second hour of the meeting. A second video tape will be made during the last hour of the series. Two trained observers will rate individual and group interaction on the Hill Interaction Matrix, the criterion being an interaction pattern in which mutual respect and trust appears. In addition, key terms (e.g., "nigger," "black power") will be placed in a semantic differential format. The participants will rate these words, the criterion being a broadened understanding of the complexity of these words.

Instructional Alternatives:

The trainee will participate in a racially-mixed sensitivity group which is structured to include a thorough discussion of the psycho-linguistics of the racial crisis and the trainee's self-consciousness about his "whiteness" or his "blackness." In addition, trainee's attitude toward white and black students will be openly discussed.

The trainee will engage in a bull session with black and white students of an Upward Bound or ABC program, telling them beforehand that he wants to become a teacher. He will discuss terms like "racist," "honky," "nigger," "Negro," "black," "whitey," "cracker," etc. in this session.

P.C. 2. Ability to recognize and deal with hostility.

For white and black teachers -- on video tape.

-- identify "acting out" of white hostility toward blacks in the form of passivity, scornful looks.

-- identify "acting out" of black hostility in the form of sleeping, low tone voice, non-attendance, passive resistance.

Measurement: A series of black and white interaction situations will be shown on video tape. Some will be overtly comfortable and polite interactions, others will show the action of hostility more directly. Students will identify patterns of interaction by scoring each situation on an interaction analysis scale. Criterion to be similarity of student scoring with that of experts.

Instructional Alternatives:

The trainee will watch a series of videotapes with a counselor experienced in working in ghetto schools. He will stop the tape at points where he wants the trainee to recognize hostility.

The trainee will teach or counsel in an Upward Bound or similar program and keep a diary of incidents of hostility between blacks and whites.

P.C. 3. Ability to recognize and deal with fear and sexual attitudes.

a. White teachers, in all-white group, to share fantasies about being physically attacked or threatened by blacks.

b. White teachers, in mixed group, to share same fantasies about being attacked.

Measurement: A fantasy session patterned after brainstorming and/or Gestalt Therapy dream sessions will be held. Participants will share fantasies and/or dreams about race. The criterion will be at three levels: (1) can they share fantasies at all (measured by report of the group leaders); (2) can they share them with some comfort by the end of training (measured by trainer observation, self-report, and group ratings on a semantic differential scale); (3) evaluation of one hour of group functioning by a trained rater using the Hill Interaction Matrix.

Instructional Alternatives:

The trainee will participate in a fantasy-storming session about fear of physical attack by blacks. Sessions--all white--will be an hour-long and run for six times.

The trainee will participate in an all-black fantasy-storming session about fears and hatreds of whites. Six sessions, one hour long.

The trainee will participate in a fantasy-storming session about fear physical attacks and sexual attitudes.

P.C. 4. Encountering Hostility

a. For Black teachers -- given hostile, self-righteous questioning by white students in micro-teaching situation--response measured by straightness of backbone, his physical positioning during the session ("not backing up at all"), and the patient quality of his voice.

b. For white teachers -- given angry and threatening group of "revolutionary" Black students in micro-teaching situation --response measured by degree of acceptance of guilt (may be carrying the burden on his shoulders) and by degree of willingness to work to change situation (open posture as listening to blacks - backbone in straight or nearly straight position). A passive reaction (self-hate, futility) is to be watched for -- might be a symptom of fear or repressed anger.

Measurement: The basic criterion is "does the teacher lose his cool?" In effect, can the teacher make it through such a session in a productive fashion without becoming flustered, angry, or embarrassed. The criterion to be a defined standard of improvement micro-teaching observer ratings made comparing first, second, and third sessions as rated by trained observers.

A second rating will be made by the students on a scale to be developed. They will rate the teacher on physical bearing, emotional attitudes, and consistency. They will also rate the degree they respect him and how much he understands them. A satisfactory score will be that the students both respect the teacher and feel they are understood by him.

Instructional Alternatives:

The trainee will practice the physical positionings mentioned in the criteria and notice the degree of straightness of backbone, openness of posture, and quality of voice.

The trainee will practice the appropriate criterion situation--4a for blacks and 4b for whites--using micro-teaching with videotape--and review it once with a supervisor and once with his students.

P.C. 5. Black Role Models

a. Have each teacher submit a list of black people in the community whom he will invite to come to his school or to his class.

b. Have each teacher submit a list of black people of historical or present national importance whom he will "bring in" to the classroom by audio-visual means.

c. The trainee will produce a film describing some aspect of Black life.

Measurement: Black students, preferably from a ghetto area, will supervise this activity and must approve of the list developed by the student.

Each trainee will be given an 8 mm movie camera or a 35 mm slide camera and will develop a film presentation describing some aspect of Black culture or life. He will have as his partner a student from the ghetto. The films will be shown to elementary and secondary school students, the criterion to be a change of understanding or an evaluation of attitude by the students as measured on a specially developed attitude or knowledge test for the film in question.
Instructional Alternative:
The trainee will develop a list of Black Role Models and the ways he will "bring" them into his classroom. He will mimeograph it and pass it around to the other trainees working on the same project.

The trainee will develop a theme for his film on Black culture and discuss it with his partner from the ghetto.

P.C. 6. One-to-one Learning Situations

a. John Sanders, a student in Upward Bound, has offered to educate teachers conversationally. There informal meetings with students from Springfield whom I know to be candid and who desire only that teachers "speak openly about race."

Measurement: The student will complete a racial attitudes and knowledge test (to be developed with the aid of Black students) before and after this experience. The criterion to be predetermined knowledge level and an improve understanding between the two testings. A second criterion to be the rating by the Black student that the teacher trainee understood and accepted him.
Instructional Alternatives:
The trainee will seek out a high school student from the ghetto and learn from him about his values and his world.

The trainee will seek out a black high school teacher and learn from him about teaching black students.

The trainee will read Weinstein (1967).

C. Cognitive Performance Criteria

P.C. 1. Listen to Malcolm X speech on the difference between Blacks and Negroes (Field Niggers and House Niggers) and respond to it in a racially-mixed group.

Measurement: The criterion to be group ratings of the trainee, four judges, two white and two black. All must agree that he understood the speech, maintained "his cool" before the group, and the criterion will be ratings by the group itself after his presentation. After his presentation is completed, the group must come to a joint evaluation of his performance in the teacher's presence. A second criterion will come from evaluation of a video tape taken of the teacher training during the group evaluation. Ratings by trained observers on his physical bearing, verbal patterns, will be made on a scale to be developed.

Instructional Alternatives:

The trainee will listen to the Malcolm X speech in two situations--one all-white group--another racially-mixed. The black trainees will listen in an all-black group and a racially-mixed one.

The trainee will listen to the Malcolm X speech on his own, writing down his reactions to it. He must then share these reactions with a "significant other" in the program.

P.C. 2. The trainee will demonstrate a knowledge of Black history and culture.

Measurement: The teacher trainee will complete a programmed text on facts of Black history and culture. Criterion: score of 90 on an objective test to be completed following the program.

Instructional Alternatives:

The trainee will take a course in Black History or Black Culture in his university or community.

The trainee will read the Autobiography of Malcolm X.

BEHAVIORAL SKILLS APPENDIX

REINFORCEMENT

Objective: To raise the frequency of desired behavior in the classroom.

Criterion: The teacher will teach three five-minute micro-teaching lessons in which he demonstrates his ability to use positive verbal reinforcement, positive non-verbal reinforcement, positively qualified reinforcement, and delayed reinforcement.

Evaluation: Supervisor will observe the lessons and categorize the different types of reinforcement used, judging teacher performance on the categories stated and on special teacher developed categories. Teacher will observe lessons and pass-fail himself. All three passes necessary for completion.

Instructional Alternatives:

1. Teacher will practice reinforcement skills in one-to-one learning situation.
2. Teacher will observe film of model teacher demonstrating reinforcement skills.
3. Teacher will list the types of reinforcers he is accustomed to using.

RECOGNIZING ATTENDING BEHAVIOR

Objective: To sensitize teachers to the indications of student attending behavior in the classroom.

Criterion: The teacher will look at a video tape of a class for ten seconds. He will then describe the facial expressions, physical posture, and verbal participation of the four students to the supervisor. Repeat four times.

Evaluation: The supervisor will play back the video tape after each teacher description and rate the teacher's accuracy. Teacher will pass if descriptions of students and perceptions of attending behavior agree with supervisor's descriptions by the fourth and fifth attempt.

Instructional Alternatives:

1. Classify the attending behavior in a college classroom or committee meeting.

2. Have teacher analyze his own pattern of attending and non-attending behavior in classrooms.

3. View 35 mm time lapse photographs of student attending behavior and rate the students' attention level.

SILENCE AND NON-VERBAL CUES

Objective: To give teachers the experience of the control over student behavior which effective use of silence can give them.

Criterion: The teacher will lead three micro-teaching discussion sections on topics which are familiar to high school students and limit his verbal participation to an initial presentation and as few questions as possible. He will rely on non-verbal cues -- smiling, nodding, gesturing, walking toward the student -- and on thoughtful silences.

Evaluation: Supervisor will clock participant in amount of time teacher spends talking. If the amount decreases during the three sessions, teacher will be evaluated on the third session. Approximate maximum level of teacher participation is a 30-second introduction and 20 seconds of further questions during a five-minute period.

Instructional Alternatives:

1. Teacher will observe film of model teacher demonstrating silence and non-verbal cueing skill.

2. Teacher will practice use of silence with a group of peers in leading a discussion on relevant topic in School of Education.

CUEING

Objective: To provide teacher with an awareness of his resource of cueing in order to help him provide success experiences for his less active students.

Criterion: The teacher will prepare one group of micro-teaching subjects with cues as to questions they will be asked five hours in advance of the session. The teacher will then teach that group, utilizing the cues. The teacher will micro-teach a second group of students, providing cues that are available in the situation.

Evaluation: Supervisor will have a record of the cues the teacher gave to the first group and will judge the teacher on the number of cues used and his effectiveness in using cueing to provide success experiences.

Instructional Alternatives:

1. Teacher will practice public and private cueing with a small class.
2. Teacher will read written materials describing cueing and list ten cues he could have used with a former or present class of his.

FLUENCY IN ASKING QUESTIONS

Objective: To get the teacher to ask as many questions as possible during the lesson, so that a beginning teacher's dependency on the lecture method can be overcome.

Criterion: The teacher will micro-teach four sessions, having prepared in advance a list of questions for each session. In the first two, he will ask as many questions as possible, trying to raise the frequency of his question-asking. In the last two, he will try to keep the frequency high and use only pertinent questions.

Evaluation: Supervisor will judge first two sessions on the degree to which the teacher "let the questions fly." He will count the number of questions in the first two sessions, making it clear to the teacher that only the number is important. Supervisor will judge last two sessions on the number of questions and on the clarity of their relation to the topic under discussion, using a simple very clear/not clear rating.

Instructional Alternatives:

1. Teacher will plan a lesson by listing fifty questions he could ask.
2. Teacher will practice asking questions in a micro-teaching setting.

PROBING QUESTIONS

Objective: To require students into thinking beyond their first answer to a question.

Criterion: The teacher will micro-teach three five-minute sessions in which he probes students by (1) asking pupils for more information and/or more meaning; (2) requiring the pupil to justify rationally his response; (3) refocusing the pupil's or class's attention on a related issue; (4) prompting the pupil or giving him hints; (5) bring other students into the discussion by getting them to respond to the first student's answer.

Evaluation: Supervisor will observe the lesson and categorize the probing questions in the five categories. Supervisor will judge teacher performance on whether or not the teacher responds in the five ways and on whether or not the teacher can concentrate on one student's question and answer.

Instructional Alternatives:

1. Teacher will observe a film of a model teacher asking probing questions.
2. Teacher will practice asking probing questions with just one student.
3. Teacher will practice asking probing questions with a group of ten students.

HIGHER ORDER QUESTIONS

Objective: To enable teachers to ask questions that prompt students to use ideas rather than just remember them.

Criterion: The teacher will teach three five-minute micro-teaching lessons in which he asks questions of the students which required them to (1) evaluate, (2) infer; (3) compare, (4) apply a concept or principle, (5) solve a problem, and (6) perceive cause and effect.

Evaluation: Supervisor will observe the lesson and categorize each teacher question according to whether or not it is a higher order or lower order question. If it is higher order, supervisor will classify it in one of the six categories. Supervisor will make judgment as to whether teacher has asked a higher order question in every category.

Instructional Alternatives:

1. Teacher will observe a film of a model teacher demonstrating higher order questions.
2. Teacher will read written materials describing higher order questions.
3. Teacher will practice asking higher order questions in a micro-teaching situation.

DIVERGENT QUESTIONS

Objective: To challenge the students to make hypotheses, project themselves into historical situations, guess at a solution to an unsolved problem, and dream up new ideas.

Criterion: Teacher will micro-teach two lessons in which he asks questions which have no "correct" answer and/or questions which are open-ended.

Evaluation: Students will judge the questions asked, in reviewing the video tape on the basis of their challenge and on the basis of the use of imagination involved in answering them. Supervisor will judge the questions on the basis of their having no "correct" answer and on their open-endedness.

Instructional Alternatives:

1. Teacher will lead a fantasy-storming session, video tape, and then play back the tape to note the most generative questions.
2. Teacher will prepare a list of questions (which are open-ended) for use in micro-teaching.

VERBAL RESPONSES

Objective: To increase the variety of teacher responses in the classroom situation.

Criterion: The teacher will practice the verbal response repertoire exercises of the General Learning Corporation Technical Skills of Teaching materials in the presence of his supervisor.

Evaluation: Supervisor will check whether the teacher conveys the intended meaning of the response to him. Teacher will pass when he can make 20 verbal responses, with three different meanings each, consecutively to the supervisor's satisfaction.

Instructional Alternatives:

1. The teacher will practice the verbal response repertoire exercises using a tape recorder for feedback which he analyzes himself.
2. The teacher designs a verbal response repertoire exercise for another communication situation (e.g., husband and wife - radio announcer).
3. The teacher will observe demonstration film of verbal response repertoire.

NON-VERBAL RESPONSES

Objective: To increase the variety of a teacher's non-verbal responses in a classroom situation.

Criterion: The teacher will practice the non-verbal response repertoire exercises of the General Learning Corporation Technical Skills of Teaching materials in the presence of a supervisor.

Evaluation: Supervisor will test whether the teacher meets his own criteria of conveying three different feelings by using the same non-verbal response three times. Teacher will pass when he can make 20 non-verbal responses with three different meanings each, consecutively and to the satisfaction of the supervisor.

Instructional Alternatives:

1. The teacher will practice the non-verbal response repertoire using a video tape recorder for feedback.

2. The teacher will watch the demonstration film of non-verbal response repertoire exercises.

3. The teacher will analyze the non-verbal response repertoire of elementary school students and design exercises to increase the effectiveness and variety of students' communication to him.

VERBAL AND NON-VERBAL RESPONSES

Objective: To integrate the two skills acquired in the previous two exercises.

Criterion: Teacher will practice the combined verbal and non-verbal response exercises in the General Learning Corporation's Technical Skills of Teaching Materials, in the presence of a supervisor.

Evaluation: Supervisor will judge teacher on the appropriateness of the non-verbal response which he combined with the verbal response and on the ease of combination. Teacher will pass when he can make 20 verbal responses, each with three different meanings and three different non-verbal responses, consecutively and to the satisfaction of the supervisor.

Instructional Alternatives:

1. Teacher will practice combined verbal and non-verbal response exercises using video tape recorder.

2. Teacher will observe demonstration film of model teacher using the combined verbal and non-verbal response technique.

SET INDUCTION

Objective: To make teacher aware of the importance of the introduction he makes for any classroom activity and to equip teacher with an easy ability to make students see their relationship to or experience some involvement in the subject being introduced.

Criterion: The teacher will micro-teach five sessions. Each session will involve the introduction of a different activity. The five activities are (1) starting a unit; (2) assigning homework; (3) beginning a class discussion; (4) preparing the class to hear student reports; and (5) introducing a film or a filmstrip.

Evaluation: Students will answer a questionnaire on the value of the teacher presentation, rating him Yes/No on "Are you interested in going ahead with the activity?" and Clear/Not Clear on "Do you see the connection between what teacher said and what you are going to do?"

Supervisor will pass teacher if he succeeds in arousing students, as indicated by smiles, hand-raising, sitting up in seats, amount of voluntary pupil participation. Fourth and fifth trials should be exciting for at least three out of five students, in judgment of supervisor.

Instructional Alternatives:

1. Teacher will observe demonstration film of model teacher employing set induction.

2. Teacher will develop a set which is motivating and teach it in a micro-teaching situation.

3. Teacher will develop a facilitating set and teach it in a micro-teaching situation.

STIMULUS VARIATION

Objective: To keep students' attending behavior at a maximum, by forcing them to use different senses in teacher-student communication and by varying the stimuli which the teacher controls.

Criterion: The teacher will prepare three short lessons to be presented to a small group of students. Teacher will decide upon appropriate times for shifting sensory channels, using silence, focusing, gesturing, shifting interaction styles, and moving about the room. The teacher will microteach the three lessons.

Evaluation: Students will evaluate to what degree they were paying attention in the class session by checking one item -- for five minutes ____, for 4 1/2 minutes ____, for four minutes ____, for 3 1/2 minutes ____. Students will also check whether they were interested ____, confused ____ bored ____. Supervisor will have a copy of the preplanned program of the teacher. He will categorize the use of stimulus variants into the six areas listed above. If teacher follows, approximately, his own program of stimulus shifts and gets the students attending to him, in judgment of the supervisor, he will pass.

Instructional Alternatives:

1. Teacher will observe demonstration film of model teacher employing stimulus variation.

2. Teacher will read a typescript of the demonstration film to study the way model teacher varies the stimulus.

3. Teacher will analyze how the students vary stimuli in the classroom and what effect their stimulus variation has on his behavior.

CLOSURE

Objective: To prepare teachers to meet the students' need for careful integration of cognitive material and for genuine feelings of achievement at the end of a lesson.

Criterion: The teacher will teach three five minute micro-teaching lessons in which he demonstrates his ability to guide students in linking familiar and new material and to give them feelings of achievement.

Evaluation: Supervisor will read student evaluations to determine their opinion of the orderliness and sense of completeness of the lesson. Supervisor will count the number of teacher summarizing and student summarizing behaviors during the three sessions. Supervisor will evaluate teacher performance on the above two dimensions.

Instructional Alternatives:

1. Teacher will observe demonstration film, read its typescript, and develop an alternative script on achieving closure with the same material.

2. Teacher will practice different aspects of closure -- its timing, its source (students or teacher) -- in a micro-teaching situation.

LECTURING

Objective: To have teachers reconsider lecturing as an instructional method, with an emphasis on the timing and purpose of the appropriate lecture.

Criterion: Teacher will read the General Learning Corporation's material on lecturing. Teacher will prepare two 5-10 minute lectures on the subject of his choice to a group of students in a micro-teaching situation.

Evaluation: (1) Supervisor will review video tape with teacher and critique the two lectures on the criteria of suitability of presentation for audience, teacher cues for students to listen, repetition of main ideas, varying the stimulus, planning and organization, style and feeling-tone of delivery, and use of illustrative material. (2) Supervisor will read the teacher's pre-planned instructional objectives. Supervisor and teacher, having read student evaluations also, then have to agree that teacher has met his instructional objectives and used the lecturing technique well.

Instructional Alternatives:

1. Teacher will read the typescript of demonstration film on lecturing.

2. Teacher will choose the best lecturer he has heard and use the supervisor's evaluation criteria on him or her.

USE OF EXAMPLES

Objective: To study and experience the use of examples in teaching, employing both the inductive and deductive approach and paying careful attention to structuring the use of examples so as to go from the simple to the complex.

Criterion: The teacher will read the GLC material on the use of examples and prepare two 5-10 minute lessons, one employing the deductive approach and one employing the inductive approach. He will then micro-teach both of them.

Evaluation: Supervisor will judge the teacher's performance on the following criteria: (1) use of simple and complex examples, (3) relationship of examples to students' direct experience, (4) connection of specific examples with main idea or point they were intended to illustrate, and (5) student participation in giving examples. Teacher will pass when his performance meets these five criteria in judgment of supervisor.

Instructional Alternatives:

1. Teacher will watch demonstration film and read typescript of model teacher's use of examples.

2. Teacher will record at the end of each day for a week the examples he used in everyday communication.

PLANNED REPETITION

Objective: To maintain a high level of student retention of main ideas by producing over-learning.

Criterion: The teacher will read the GLC materials on planned repetition and prepare two 5-10 minute lessons in which he plans to use simple repetition, spaced repetition, cumulative repetition, and massed repetition. The teacher will micro-teach the two lessons.

Evaluation: Students will evaluate teacher on whether or not he repeated new ideas after introducing them, whether or not he summarized the main ideas, whether or not the student can remember any of the main ideas, and whether or not the teacher was boring because he repeated ideas too often. Supervisor will evaluate teacher on the basis of his use of the four types of repetition, his involvement of the students in the repetition, and the timing of his use of repetition.

Instructional Alternatives:

1. Teacher will watch the demonstration film and read the typescript of GLC planned repetition materials.

2. Teacher will train students how to use planned repetition of the messages which they want the teacher to understand.

COMPLETENESS OF COMMUNICATION

Objective: To sensitize teachers to the clarity or lack of clarity of their techniques of giving directions and to awaken them to careful attention to student feedback about how well the teacher has communicated.

Criterion: The teacher will verbally direct micro-teaching students to reproduce a geometric pattern. The students will not see the pattern. They will depend entirely on teacher's verbal directions to reproduce the pattern correctly. All of teacher's directions must be verbal; he will use no gestures or facial expressions. After the lesson, teacher will look at student drawings and note where mistakes occurred. Then teacher directs a new group of micro-teaching students to reproduce the same pattern.

Evaluation: Teacher will evaluate himself on the basis of first and second set of drawings. Supervisor will evaluate teacher on the basis of first and second set of drawings and on the basis of supervisor's own attempt to draw the pattern by listening to the directions of the teacher.

Instructional Alternatives:

1. Teacher will watch demonstration film of "good model" and "bad model" of completeness of communication skill.
2. Teacher will practice giving directions for homework assignments with a small group of students, noticing different cues which students give when they don't understand.

MATHEMATICS APPENDIX

Part A	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
A. Numbers, Operations, Mathematical systems				
1. Natural numbers				
2. Ideas of order				
3. Betweenness				
4. "Greater than"				
5. "Less than"				
6. "Equal to"				
7. Recognition and symbolization of additive and subtractive situations				
8. Relationship between addition and subtraction				
9. Idea of commutative property of addition				

	Demonstrate Proficiency	Demonstrate Knowledge of process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
10. Ordinal use of number				
11. Associative property of addition				
12. Multiplicative and divisive situations				
13. Relationship between processes				
14. Natural number line				
15. Commutative and associative properties of multiplication				
16. Distributive property				
17. Identity elements				
18. Zero in multiplication and division				
19. Fractions				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
20. Meaning of fractions				
21. Equivalent fractions				
22. Sets of equivalent fractions				
23. Natural number line (extended)				
24. Related sentences				
25. Addition and subtraction				
26. Multiplication and division				
27. Rounding numbers				
28. Rational numbers of arithmetic				
a. ideas of order				
b. betweenness				
c. "greater than"				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
d. "less than"				
e. "equal to"				
29. Number line for rational numbers of arithmetic				
30. Properties of operations of natural numbers extended to rational numbers				
31. Reciprocals				
32. Integers				
33. Order of operation				
34. Integers, properties of operations				
35. Real numbers				
36. Irrationals as non-repeating decimals				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
B. Sets, Conditions, (equations, Inequalities) Variables				
1. Ideas of "many" and "few"				
2. Sets				
3. Determining equivalence by one-to-one correspondence				
4. Grouping and re-grouping (through 10)				
5. Statements of "equal to," "greater than," "less than"				
6. Recognizing combining and separating actions				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
7. Grouping and re-grouping (through 18)				
8. Statements of equality that involve conditions for problem situations				
9. Sets and subsets				
a. Of natural numbers				
b. Of points				
10. Tabulating sets				
11. Statements of inequalities that involve ideas of "greater than" and "less than"				
12. Symbolism				
13. Concept of universe				
14. Truth set				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
15. Sets of proportional rate pairs				
16. Sets of equivalent fractions				
17. Use of a variety of symbols as placeholders				
18. Sets of factors				
19. Union of sets				
20. Intersection of sets				
21. Sets of multiples				
C. Ordered pairs (including rate pairs)				
1. Use of an ordered pair of numbers to indicate position of an object within a set of objectives				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
2. Introduction to rate pairs: Use of expressions like "2 out of 3," etc.				
3. Concept of ordered pairs				
4. Meaning of rate pairs				
5. Fractions as ordered pairs				
6. Meaning of proportional rate pairs				
7. Generating sets of proportional rate pairs				
8. Generating sets of equivalent fractions				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
9. Idea of functions and their graphs				
10. Finding proportional rate pairs (cross-product method)				
11. Per cent				
12. Rational numbers as components of rate pairs				
D. Problem solving				
1. Combining and separating actions associated with pictured situations				
2. Problem situations as described by the following mathematical sentences:				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
2 2 + 3 = ▨ 5 - 3 = ▨ ▨ + 3 = 5 ▨ - 3 = 2				
3. Introduction to imagined actions				
4. Comparative subtraction (finding the difference)				
5. Mathematical sentences for problem situations extended to include the following: 4 x 2 = n 13 + n = 45 4 ÷ 2 = n 45 - n = 13				
6. Averages				
7. Problem situations involving remainders				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
8. Use of rate pairs in problem situations				
9. Mathematical sentences extended to include: $4 \times n = 12$ or $12 \div n = 4$ $\frac{3}{1} \cdot \cdot \frac{n}{4}$				
10. Use of related sentences in problem solving				
11. Multiple-step problems				
12. Use of rational numbers as components of rate pairs				
13. Use of rate pairs extended to include "three cases" of per cent				

	Demonstrate Proficiency	Demonstrate Knowldege of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
14. Use of formulas				
15. Problems involving conditions for inequality				
16. Graphing solution sets				
E. Measurement				
1. Concept of a unit of measure				
2. Intuitive judgment of precision of measurement				
3. Idea of linear measure				
4. Idea of capacity measure				
5. Concept of standard units:				
a. Inch				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
b. Foot				
c. Pint				
d. Quart				
6. Relationship between standard units				
a. Inch and Foot				
b. Pint and Quart				
7. Concept of Standard units extended to include:				
a. Yard				
b. Gallon				
c. Ounce				
d. Pound				
e. Dozen				
8. Units of time				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
9. Equivalent measures				
10. Fractions in linear measure				
11. Finding perimeters				
12. Concept of area:				
a. Square inch				
b. Square foot				
c. Square yard				
d. Square mile				
13. Angle measure				
14. Metric measures				
15. Concept of volume				
16. Time zones				
17. Finding area of parallelogram				
18. Measure of volume				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material to Approach to Satisfy Skills Needs
19. Precision in measurement				
20. Finding area of triangles				
21. Finding circumference and area of circles				
22. Finding volume of rectangular prisms				
F. Geometry				
1. Closed and open curves				
2. Interior and exterior of curves				
3. Lines				
4. Segments				
5. Intersecting lines				
6. Parallel lines				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
7. Lines as sets of points				
8. Betweenness for points in lines				
9. Subsets of Lines				
10 Rays				
11. Angles				
12. Congruence for segments				
13. Congruence for angles				
14. Simple closed curves:				
a. Polygons				
b. Triangles				
c. Parallelograms				
d. Rectangles				
e. Squares				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
15. Circles				
16. Concept of planes				
17. Lines as subsets of planes				
18. Perpendicular				
19. Right angles				
20. Classification of polygons				
21. Congruence extended to include polygons				
22. Open and closed surfaces				
23. Plane and curved surfaces				
24. Planes and subsets of planes				
25. Closed surfaces in space				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
26. Congruence of polygons by sliding				
27. Idea of similarity				
28. Similarity of polygons				
29. Classification:				
a. Of angles				
b. Of triangles				
c. By reflecting				
30. Symmetry				
31. Intersections of planes and surfaces				
32. Symmetry of quadrilaterals				
33. Symmetry of circles				
34. Translations in the plane				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
35. Expansion in the plane				
36. Proportions of similar triangles				
37. Reflections in the origin				
38. Pythagorean theroem				
39. Rotations				
40. Planes and convex figures				
G. Numeration				
1. Base-ten numeration system				
2. Grouping by:				
a. Tens				
b. Hundreds				
c. Thousands				
3. Additive property				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
4. Regrouping in preparation for computation				
5. Place value				
6. Roman numerals				
7. Reading and writing fraction numerals				
8. Mixed numerals				
9. Expanded notation				
101 Decimals as an extension of base-ten numeration				
11. Exponential notation				
12. Numeration in bases other than ten				
H. Computation				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
1. Basic facts				
2. Sums and minuends through 18				
3. Addition and subtraction				
a. Of natural numbers				
b. Involving amounts of money				
4. Multiplication:				
a. involving 10				
b. involving 100				
c. involving 1000				
d. Basic facts				
5. Products and dividends through 81				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability Select Material and Approach to Satisfy Skills Needs
3. Odd and even numbers				
4. Prime and composite numbers				
5. Idea of divisibility				
6. Idea of division. algorism				
7. Greatest common factor				
8. Multiples				
9. Least common multiple				
10. Prime factorization				
11. Exponents				
12. Number of factors				
13. Sum of the Factors				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
12. Expressing remainders in division				
13. Integers:				
a. Addition				
b. Subtraction				
c. Multiplication				
d. Division				
14. Real Numbers:				
a. Addition				
b. Subtraction				
c. Multiplication				
d. Division				
I. Number Theory				
1. Factors				
2. Common Factor				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
6. Multiplication of natural numbers				
7. Division of natural numbers				
8. Remainders in division				
9. Rational numbers:				
a. Addition				
b. Subtraction				
c. Multiplication				
d. Division				
10. Mixed numerals				
11. Decimals				
a. Addition				
b. Subtraction				
c. Multiplication				
d. Division				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
11. Mutually exclusive events				
12. Independent events				
K. Applications (home, business, sciences, industry, etc.)				
1. Use of standardized measuring instruments				
a. Inch and foot rule				
b. Yard rule				
c. Pint and quart containers				
2. Use of money (coins and bills)				
3. Purchasing				
4. Making change				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
5. Use of standardized measuring instruments				
a. Gallon containers				
b. Weight scales				
c. Clock				
d. Calendar				
e. Thermometer				
f. Teaspoon				
g. Tablespoon				
h. Cup				
i. Dry pint and quart				
j. Peck				
k. Bushel				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
6. Calibration of measuring instruments				
7. Finding averages				
8. Interpreting time zones				
9. Standard time				
10. Use of scale drawings				
11. Use of metric measures				
12. Percents				
13. Use of frequency charts and graphs of statistical data				
14. Interest				
15. Commission				
16. Discount				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
L. Logic				
1. Use of the logical connective "and"				
2. Use of the logical connective "or"				
3. The meaning of the quantifiers "some," "all," and "none."				
4. The connective "and" and its relationship to intersection of sets				
5. The meaning of the connective "or"				
6. The relationship between "or" and the union of sets				
7. The meaning of the connective				

	Demonstrate Proficiency	Demonstrate Knowledge of Process	Demonstrate Ability to Diagnose	Demonstrate Ability to Select Material and Approach to Satisfy Skills Needs
8. The relationship between "not" and the complement of a set				
9. The meaning of the connective "if, then"				
M. Vectors				
1. Addition of vectors				
2. Properties of addition of vectors and the commutative group				
3. Solving problems involving addition of vectors				
4. Scalar multiplication and properties of scalar multiplication				
5. Two dimensional vector space				

Part B

Examples of Mathematics Performance Criteria

Area A: Number, Operations, Mathematical Systems

Topic 25: Subtraction (of whole numbers).

Proficiency

Criterion 1: When presented with a horizontal algorithrn (in a variety of number bases) showing numerical differences, the prospective teacher will provide the correct response to each set.

Evaluation: 90% correct.

Instructional Alternatives:

1. Mathematics courses incorporating this skill.
2. Programmed text dealing with numbers, operations, and mathematical systems.

Process

Criterion 2: The prospective teacher will demonstrate his knowledge of the subtraction process by using expanded notation to explain five of his responses in Criterion 1.

Evaluation: 100% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Mathematics courses as in Criterion 1.
2. Lecture demonstration of this skill.
3. Programmed text as in Criterion 1.

Diagnosis

Criterion 3: Given five subtraction examples with incorrect responses included, the prospective teacher will supply a logical explanation of why these responses resulted.

Evaluation: Evaluators, having previously determined the most likely cause of errors, will rate the candidate "pass" or "fail."

Instructional Alternatives:

1. Videotape lecture-dicussion of likely difficulties that people have in learning subtraction.
2. A brief booklet describing typical errors in numbers operations.

Selection

Criterion 4: The prospective teacher will demonstrate how Cuisenaire rods can be effectively used to teach subtraction.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Lecture-demonstration of the uses of Cuisenaire rods in teaching numbers operations.
2. A short pamphlet describing the use of Cuisenaire rods.

Area B: Sets, Conditions, and Variables.

Topic 3: Determining equivalence by one-to-one correspondence.

Proficiency

Criterion 1: Given 10 sets, (of numbers, or objects, etc) the prospective teacher will determine which ones can be placed in one-to-one correspondence.

Evaluation: 90% correct.

Instructional Alternatives:

1. Mathematics course in set theory.
2. Programmed booklet on the theory and functioning of sets.

Process

Criterion 2: Given two sets of objects, the prospective teacher will demonstrate by *two* mappings whether or not equivalence exists for these sets.

Evaluation: 100% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Mathematics course in set theory.
2. Videotape lecture demonstration on the theory and use of sets.

Diagnosis

Criterion 3: Given 5 incorrectly performed mappings the prospective teacher will provide a logical explanation of why errors arose.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Small booklet describing common errors made while using sets including explanations of why they occur.
2. Videotaped lesson on common mistakes in using sets.

Selection

Criterion 4: The prospective teacher will perform 10 mappings of his choice using a variety of numbers, symbols, and objects, in the presence of three evaluators.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Booklet of suggested methods in teaching "sets."
2. Videotape instruction in the teaching of sets.

Area G: Ordered Pairs.

Topic 7: Generating sets of proportional rate pairs.

Proficiency

Criterion 1: Given one member of a set of rate pairs, generate 4 more members of this set of proportional rate pairs.

Evaluation: 100% proficiency.

Instructional Alternatives:

1. Videotape lecture on generation of proportional rate pairs.

2. Individual reading in mathematics text books on this skill.

Process

Criterion 2: Given the proportional rate pair 30/50, explain how the proportional rate pair 12/20 would be generated from it.

Evaluation: "Pass" judgment by evaluator.

Instructional Alternatives:

1. Videotape explanation of this skill.

2. Booklet describing the process of rate pair generation.

Diagnosis

Criterion 3: Given the proportional rate pair 30/45, explain why 15/20 is not a correct member of this rate pair.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Descriptive booklet of common errors in generating rate pairs.

2. Lecture discussion of errors in generating rate pairs.

Selection

Criterion 4: Using a set of concrete objects the prospective teacher will demonstrate how proportional rate pair members are generated.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Videotape presentation of techniques used in teaching about rate pairs.
2. Textual description of technique and methods useful in teaching about rate pairs.

Area D: Problem Solving.

Topic 6: Averages.

Proficiency

Criterion 1: Given 10 sets of numbers to be added, with each set having a variety of addends, the prospective teacher will determine the average of each set.

Evaluation: 90% correct.

Instructional Alternatives:

1. Written instruction in averaging numbers.
2. Videotape-lecture on how to average.

Process

Criterion 2: Given a group of numbers, the prospective teacher will explain and give the rationale for each step used in averaging the given numbers.

Evaluation: Satisfaction of a mathematics evaluator in correctness of responses.

Instructional Alternatives:

1. Short lecture on the process and rationale for averaging numbers.
2. A written description of the "averaging" process.

Diagnosis

Criterion 3: Given five common errors often arising when averaging numbers, the prospective teacher will give a logical explanation for the incorrect results.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Videotape demonstration of diagnoses of mistakes made in "averaging."
2. Small group discussion with a mathematician as to why errors arise in "averaging."

Selection

Criterion 4: Given a small group of students and a sack of 100 marbles, demonstrate how the principle of "averaging" could be taught.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Discussion group of possible methods employed to teach "averaging."
2. A list of methods and techniques, with descriptions included to be used in teaching this skill.

Area E: Measurement.

Topic 17: Finding area of parallegrams

Proficiency

Criterion 1: Given five parallelograms with a variety of dimensions provided (some of which are extraneous), the prospective teacher will determine their areas.

Evaluation: 100% correct.

Instructional Alternatives:

1. Mathematics course which incorporates this skill.
2. Reading textual materials on finding areas of parallelograms.

Process

Criterion 2: Given a parallelogram with only one dimension provided, the prospective teacher will draw in the second dimension that must be known in order to determine the area, and explain why it is necessary.

Evaluation: Correct response and explanation as judged by an evaluator.

Instructional Alternatives:

1. Videotape lecture concerning the process of determining areas of parallelograms.

2. Mathematics course dealing with this process.

Diagnosis

Criterion 3: Given 5 parallelograms, dimensions included, with areas incorrectly determined, the prospective teacher will provide a logical explanation of why errors arose.

Evaluation: 80% proficiency as determined by an evaluator.

Instructional Alternatives:

1. Videotape discussion of diagnoses of errors in learning this skill.

2. Small group discussion concerning the diagnosis of errors arising in the determination of areas of parallelograms.

Selection

Criterion 4: Given a parallelogram, the prospective teacher will demonstrate with diagrams its relationship to a rectangle and explain why this relationship is important in determining area.

Evaluation: "Correct" response as judged by 2 and 3 evaluators.

Instructional Alternatives:

1. Lecture on how determination of areas of parallelograms can best be presented in the classroom.

2. Reading in a mathematics textbook which explains various methods of understanding this skill.

Area F: Geometry

Topic 37: Reflections in the origin.

Proficiency

Criterion 1: Given 10 geometric figures the prospective teacher will sketch their reflections.

Evaluation: 90% correct.

Instructional Alternatives:

1. Mathematics course which incorporates this skill.
2. Videotape demonstration of this skill.

Process

Criterion 2: The prospective teacher will answer 10 multiple choice questions testing whether he understands that the reflections of geometric figures in the origin have coordinates (-x,y) when the original coordinates are (x,y).

Evaluation: 90% correct.

Instructional Alternatives: Same as Criterion 1.

Diagnosis

Criterion 3: Given 5 examples of incorrectly determined reflections, the prospective teacher will provide a logical explanation of why errors arose.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Videotaped lessons showing confusion on the part of students and explanatory diagnosis made by a master teacher.
2. Small group discussion on diagnosing errors of this type.

Selection

Criterion 4: The candidate will demonstrate how an overhead projector and the concept of rotation can be used to teach reflection in the origin.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Videotape demonstration of possible methods for teaching this skill.
2. A list of methods and descriptions for teaching this skill.

Area G: Numeration

Topic 4: Regrouping in preparation for computation.

Proficiency

Criterion 1: The prospective teacher will answer 10 questions of the sort:

6 tens 3 ones = 5 tens _?_ ones
3 thousands 23 ones + _?_ thousands _?_ hundreds _?_ ones

Evaluation: 100% correct.

Instructional Alternatives:

1. Programmed instruction in this skill.
2. Mathematics course which includes this skill.

Process

Criterion 2: The candidate will answer 10 questions similar to those in Criterion 1 except that the numeration systems will be other than base ten.

Evaluation: 90% correct.

Instructional Alternatives: Same as Criterion 1.

Diagnosis

Criterion 3: Given 5 examples of incorrectly performed regroupings the prospective teacher will provide a logical explanation for the errors.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Small group discussion of diagnoses of errors arising from regrouping.

2. Written description and examples of errors commonly made when using this concept.

Selection

Criterion 4: The prospective teacher will present a written lesson plan for teaching regrouping to a group of remedial students who had previously failed to comprehend the concept.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Videotape demonstrations of techniques used to teach regrouping to students of varying abilities.

2. A mathematics methodology course which incorporates the teaching of this skill.

Area H: Computation

Topic 13a: Integers -- Addition

·Proficiency

Criterion 1: Given 10 assorted addition problems involving integers, the prospective teacher will provide the correct answers.

Evaluation: 90% correct.

Instructional Alternatives:

1. A mathematics course which includes addition in its curriculum.

2. Programmed booklet for learning addition on an individual basis.

Process

Criterion 2: The candidate will (verbally) correctly associate "absolute value" with the process of addition.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives: Same as Criterion 1:

Diagnosis

Criterion 3: Given 5 addition of integer problems with incorrect answers, the candidate will supply a logical explanation for the errors.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Small group discussion of diagnoses of errors arising from addition of integers.
2. Videotaped lessons showing confusion on the part of students and explanatory diagnoses made by a master teacher.

Selection

Criterion 4: The candidate will explain two methods of teaching the addition of integers.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. A mathematics methodology course where techniques for teaching this skill are discussed.
2. Videotape demonstration of various techniques for teaching addition of integers.

Area I: Number Theory

Topic 5: Idea of Divisibility

Proficiency

Criterion 1: Given 10 examples involving divisors of 2 → 11, the prospective teacher will tell which examples are divisible and which are not.

Evaluation: 90% correct.

Instructional Alternatives:

1. Mathematics course which teaches this skill.
2. Programmed booklet on divisibility.

Process

Criterion 2: Using $a=bg+r$ the prospective teacher will explain the meaning of divisibility.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives: Same as Criterion 1.

Diagnosis

Criterion 3: The prospective teacher will create a true-false test of 10 items which will aid in determining whether a student has a correct conception of divisibility.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Small group discussion of the expected misunderstandings, and reasons for such, in teaching this concept.
2. View a videotape showing the type of confusions arising in lessons on divisibility and the handling of these problems by a master-teacher.

Selection

Criterion 4: Given a small group of students and a sack of beans, the prospective teacher will demonstrate and explain the concept of divisibility.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. A list of descriptive techniques for teaching the concept of divisibility.
2. Videotape demonstrations of several methods for teaching about this concept.

Area J: Probability and Statistics

Topic 4: Events and Their Probabilities

Proficiency

Criterion 1: Given 10 problems asking for the probability of a favorable outcome, the prospectiveteacher will provide the correct responses.

Evaluation: 90% correct.

Instructional Alternatives:

1. Mathematics course in probability.
2. Videotape lesson in determining the probability of favorable outcomes.

Process

Criterion 2: The prospective teacher will state a correct general formula for finding the probability of an event using variables.

Evaluation: Correct response as judged by an evaluator.

Instructional Alternatives:

1. Mathematics course in probability theory.

2. Programmed booklet in probability theory.

Diagnosis

Criterion 3: The candidate will correctly explain the fallacy in reasoning in this situation: A person who has gotten "heads" on five consecutive flips of a coin states that the probability of getting a "tail" on the next flip is greater than the probability of getting another "head."

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Group discussion of diagnoses skills in teaching probability.
2. Videotape presentation of diagnoses made by master-teachers.

Selection

Criterion 4: Given a particular probability (e.g. 4/9), the prospective teacher will create three different situations which will yield such an answer.

Evaluation: 100% correct.

Instructional Alternatives:

1. Programmed materials for developing this skill on an individual basis.
2. Mathematics methods course which deals with the presentation of this process.

Area K: Applications

Topic 4c: Clock

Proficiency

Criterion 1: Given 10 problems in which he must "tell time" on 12 hour and 24 hour clocks with second hands, the prospective teacher will give the correct time to the nearest second.

Evaluation: 90% correct.

Instructional Alternatives:

1. Textual materials which explain how to tell time.
2. Programmed materials explaining this skill.

Process

Criterion 2: Given 10 problems in which the original time is given, the prospective teacher will give the "new" time when told how many times the minute and second hands have rotated.

Evaluation: 90% correct.

Instructional Alternatives: Same as Criterion 1.

Diagnosis

Criterion 3: Given 5 seven year old children, the prospective teacher will determine whether each can tell time by asking him a maximum of five questions.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. A course in the methodology of teaching mathematics.
2. A list of techniques, including descriptions, for teaching this skill.

Area L: Logic

Topic 4: The connective "and" and its relationship to the intersection of sets.

Proficiency

Criterion 1: Given 10 compound conditions involving "and" ($\wedge$), the prospective teacher will solve them correctly.

Evaluation: 100% correct.

Instructional Alternatives:

1. Mathematics course in logic.
2. Lecture on the solution of compound conditions.

Process

Criterion 2: The prospective teacher will correctly explain the meaning of "and" as it relates to the intersection of sets.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Mathematics course in logic.
2. Reading textual material which explains the meaning of the connective "and."

Diagnosis

Criterion 3: Given 5 compound conditions involving "and" ($\wedge$) which have been incorrectly solved, the prospective teacher will provide a logical explanation for these errors.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Written descriptions of difficulties children have in solving problems of this type.
2. Videotape demonstration of a master-teacher diagnosing children's difficulties with these problems.

Selection

Criterion 4: Given a number line and Venn diagrams, the prospective teacher will associate the two as they pertain to "and" and the intersection of sets.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. A mathematics methodology course which includes the above technique.
2. A list of well described techniques for presenting this type of association.

Area M: Vectors

Topic 4: Scalar Multiplication and Properties of Scalar Multiplication.

Proficiency

Criterion 1: Given 10 problems involving scalar multiplication, the prospective teacher will solve them correctly.

Evaluation: 90% correct.

Instructional Alternatives:

1. Mathematics course on vectors and scalar multiplication.
2. Programmed materials on scalar multiplication.

Process

Criterion 2: The prospective teacher will define with abstract symbols and variables, scalar multiplication.

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. Mathematics course involving scalar multiplication.
2. Videotape lecture defining the properties and use of scalar multiplication.

Diagnosis

Criterion 3: Given 5 incorrectly solved scalar multiplication problems, the prospective teacher will provide a logical explanation for the errors.

Evaluation: 80% proficiency as judged by an evaluator.

Instructional Alternatives:

1. Videotape demonstration of a master teacher diagnosing children's difficulties with scalar multiplication.
2. Group discussion on types of errors commonly arising in scalar multiplication and ways in which they can be diagnosed.

Selection

Criterion 4: The prospective teacher will give three examples of how scalar multiplication relates to the "real" world. (e.g. travel in airplanes).

Evaluation: Satisfaction of 2 out of 3 evaluators.

Instructional Alternatives:

1. A list of examples which apply scalar multiplication to the contemporary world.
2. A lecture on the use of vectors and scalar multiplication in the real world.

LANGUAGE ARTS APPENDIX

Necessary Implementation for the Reading and Language Arts Alternate Routes

I. A speech and reading center should be established for diagnosis and treatment of speech and reading disorders.

II. An expanded T.V. and film center should be established, housing a library of tapes and films, and teaching techniques in making tapes and films. This center should also produce educational films and tapes for a larger audience than our local one.

III. Communications equipment, such as still and movie cameras and film should be provided for each candidate's use.

IV. Clinics, teaching sensitivity, strength, curriculum innovation and evaluation should be set up.

V. Linking with other disciplines should take place in all activities: i.e., the centers and clinics should have personnel co-appointed in the Psychology, Speech, English, Art, Music, (etc., etc., etc.,) departments.

VI. Institutes for personnel and information dissemination should be set up for various education problems: i.e., an Urban Education Institute; an Institute for Teaching the Gifted; an Institute for Rural Education, an Aesthetics Institute. The communications areas are involved in all of these, and more.

VII. A cultural program of films, plays, lectures and other experiences on campus and in other areas to broaden our student's perspective in the current world of communications.

VIII. An exchange program with other states and countries, lasting anywhere from one day at a time to one year, aimed at increasing the knowledge and practice of the process of communication. Included here should be active participation with sub-cultures other than one's own.

Listening--Performance Criteria

Proficiency

1. **Performance**

Establish a purpose for listening.

Criterion

Given 10 titles of listening experiences, e.g. music, drama, speeches, etc., be able to establish at least 2 different purposes for listening to each. For example, purposes could be in terms of evaluation, interpretation, identification, style, review, association, etc.

High level performance would be to explain the rationale for 5 purposes for listening to 10 given titles to the satisfaction of a panel of experts.

Low level performance would be to identify 5 purposes for listening to 10 given speech titles to the satisfaction of a panel of experts.

Instructional Alternatives

a. Establish purposes, then listen to speeches on tape or live and test out achieving purposes.
b. Read a book of speeches designed for various purposes and design purposes for listening.
c. Take freshman first course in public speaking.

Listening--Knowledge of the process

1. **Performance**

Demonstrate knowledge of the process of establishing a purpose for listening.

Criterion

High level: Define evaluation, interpretation, identification recognizing style, mood, intent, tone, reviewing, and association in terms of at least three aural media, i.e., music, drama, speeches, etc. with accuracy judged as outstanding by a panel of experts.

Low level: Define the above purposes for listening with accuracy judged as satisfactory by a panel of experts.

Instructional Alternatives

a. Read an appropriate book.
b. Take a course in listening.
c. Through programmed instruction, learn about purposes for listening.

Listening--Ability to Diagnose

1. Performance

Diagnose pupils' ability to establish a purpose for listening.

Criterion

High level: Candidate must demonstrate, with three children, the administration of an oral version of the McDonald-Zimney Versatility Test and be judged outstanding by a panel of experts. Candidate must evaluate results of test and be judged outstanding by panel of experts.

Low level: Candidate must demonstrate familiarity with above test and evaluate results of test to the satisfaction of a panel of experts.

Instructional Alternatives

a. Practice in Micro-teaching clinic.
b. Read prescribed list of books and articles on evaluating listening ability.
c. Practice evaluating children in actual public school classroom situations.

Listening--Selection of Materials

1. Performance

Select materials for teaching pupils to establish a purpose for listening.

Criterion

Lower level: Given 3 children who have not satisfied the evaluative criterion for the performance, the candidate will select a given number of approaches or materials one or more of which will successfully enable the children to pass the criterion within three lessons' duration.

Higher level: select successful approaches individually for 5 different children to the satisfaction of a panel of experts.

Instructional Alternatives

a. Read a prescribed list of books.
b. Take an appropriate course.
c. Participate in a micro-teaching clinic situation.
d. Visit curriculum center containing published and unpublished approaches.
e. Practice in a public school classroom situation.

Listening--Performance Criteria

Proficiency

2. Performance

Demonstrate comprehension and critical thinking competencies in listening including the following sub-skills:

a. finding main idea
b. hearing sequence of ideas
c. recalling details
d. drawing conclusions
e. making inferences
f. predicting outcomes
g. classifying ideas and details
h. differentiating between fact and opinion
i. selecting and evaluating information
j. forming an opinion
k. hearing relationships
l. ascertaining mood and intent of speaker

Criterion

High level: at least 90th percentile for college sophomores on the Sequential Tests of Educational Progress, form 1A or 1B.

Low level: at least 70th percentile for college sophomores on STEP listening test, form 1A or 1B.

Instructional Alternatives

a. Practice listening for purposes A-L above in programmed listening skill·course.

b. Attend a freshman oral communication-public speaking course
c. Read a prescribed list of books on various comprehension skills in listening.

Listening--Knowledge of the process

2. Performance

Knowledge of comprehension and critical thinking competencies in listening including the following sub-skills:

a. finding main idea
b. hearing sequence of ideas
c. recalling details
d. drawing conclusions
e. making inferences
f. predicting outcomes
g. classifying ideas and details
h. differentiating between fact and opinion
i. selecting and evaluating information
j. forming an opinion
k. hearing relationships
l. ascertaining mood and intent of speaker

Criterion

High level: Candidate must pass a written examination with an "outstanding" evaluation by a panel of experts on the history of research on comprehension in listening, definitions, and rationale for the above terms including research on the thinking process.

Low level: Candidate must define the above terms in detail with an evaluation of satisfactory by a panel of experts.

Instructional Alternatives

a. Attend course in listening-thinking skills.
b. Read prescribed list of texts on listening-thinking skills.
c. Read programmed text on listening-thinking skills.

Listening--Ability to Diagnose

2. Performance

Diagnose pupils' comprehension and critical thinking competencies in listening including the following sub-skills:

a. finding main idea
b. hearing sequence of ideas
c. recalling details
d. drawing conclusions
e. making inferences
f. predicting outcomes
g. classifying ideas and details
h. differentiating between fact and opinion
i. selecting and evaluating information
j. forming an opinion
k. hearing relationships
l. ascertaining mood and intent of speaker

Criterion

High level: Candidate must administer to three children the STEP Listening Test and The Brown-Carlsen Listening Test and interpret the results to the satisfaction of a panel of experts.

Low level: Candidate must be familiar with the above tests and interpret results of same to the satisfaction of a panel of experts.

Instructional Alternatives

a. Practice in a micro-teaching clinic situation.
b. Take a course in audiology or elementary language arts.
c. Go though a set of prescribed program texts on listening comprehension and critical thinking.
d. Course in diagnosis of difficulties.

Listening--Selection of Materials

2. Performance

Select materials for providing practice in comprehension and critical thinking competencies including sub-skills A-L:

a. finding main idea
b. hearing sequence of ideas
c. recalling details
d. drawing conclusions
e. making inferences
f. predicting outcomes
g. classifying ideas and details
h. differentiating between fact and opinion
i. selecting and evaluating information

j. forming an opinion
k. hearing relationships
l. ascertaining mood and intent of speaker

Criterion

Low level: Given 3 children who have not satisfied the evaluative criterion for the performance, the candidate will select a given number of approaches or materials one or more of which will successfully enable the children to pass the criterion within three lessons' duration.

High level: select successful approaches individually for 5 different children.

Instructional Alternatives

a. Read a prescribed list of books
b. Take an appropriate course.
c. Participate in a micro-teaching clinic situation.
d. Visit curriculum center containing published and unpublished approaches.
e. Practice in a public school classroom situation.

Listening--Performance Criteria

Proficiency

3. Performance

Demonstrate ability to understand vocabulary.

Criterion

High level: A minimum raw score of 70 on the Miller Analogies Test and a comparable score on a comparable verbal aptitude test testing knowledge of dialect.

Low level: A minimum raw score of 40 on the Miller Analogies Test and a comparable score on a comparable verbal aptitude test testing knowledge of dialects.

Instructional Alternatives

a. Since this is a basic aptitude performance, test and re-test over time seems to be one alternative.

b. Vocabulary building exercises through programmed instruction.

c. Reading a prescribed list of books.

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Listening--Knowledge of the process

3. Performance

Knowledge of vocabulary.

Criterion

High Level: Candidate must pass an examination on dialects in the United States and their change and movement over time with an evaluation of outstanding by a panel of experts.

Low level: Candidate must pass an examination on the meaning of dialects and their prevalence in the United States with an evaluation of satisfactory by a panel of experts.

Instructional Alternatives

a. Take a linguistics course
b. Take an anthropology course
c. Read a prescribed list of books
d. Experience living in sections of the United States where dialects are prevalent.

Listening--Ability to Diagnose

3. Performance

Diagnose pupils' vocabulary.

Criterion

High level: Candidate must satisfy the American Psychological Association's criteria for certification to administer and interpret individual intelligence tests such as the Wechsler Intelligence Scale for Children and Stanford Binet.

Low level: Candidate must successfully administer and interpret at least 5 standardized vocabulary tests to three students and be judged satisfactory by a panel of experts.

Instructional Alternatives

a. Take appropriate courses in the administration of individual intelligence tests.
b. Practice administering tests in a micro-teaching clinic situation.
c. Read test manuals on the administration of appropriate tests.

d. Read a prescribed list of books on the topic.
e. Participate in programmed instruction.

Listening--Selection of an Approach

3. Performance

Select an approach for teaching vocabulary to various pupils.

Criterion

Lower level: Given 3 children who have not satisfied the evaluative criterion for the performance, the candidate will select a given number of approaches or materials one or more of which will successfully enable the children to pass the criterion within three lesson's duration.

Higher level: select successful approaches individually for 5 different children.

Instructional Alternatives

a. Read a prescribed list of books.
b. Take an appropriate course.
c. Participate in a micro-teaching clinic situation.
d. Visit curriculum center containing published and unpublished approaches.
e. Practice in a public school classroom situation.

Listening--Performance Criteria

Proficiency

4. Performance

Demonstrate ability to adjust level and speed of listening to the established purpose.

Criterion

High level: Evaluation of outstanding by a panel of experts that the candidate has achieved his purpose and has demonstrated three levels of listening, 1) identification 2) interpretation 3) Association.

Low level: Evaluation of the above as satisfactory.

Instructional Alternatives

a. Practice in establishing purposes for listening to a variety of prescribed listening experiences and experimenting with a variety of attending behaviors.
b. Reading materials on attending behavior.

Listening--Knowledge of the process

4. Performance

Knowledge of adjusting level and speed of listening to the established purpose.

Criterion

High level: Pass examination on the concept of adjusting level to purpose with an evaluation of outstanding by a panel of experts.
Low level: Pass examination with an evaluation of satisfactory by a panel of experts.

Instructional Alternatives

a. Attend a course on listening skills.
b. Read a prescribed list of books on listening skills.
c. Go through programmed course on listening skills.

Listening--Ability to Diagnose

4. Performance

Diagnose adjusting level and speed of listening to the established purpose.

Criterion

High level: Candidate must demonstrate, with three children, the administration of an oral version of the McDonald-Zimmy Versatility Test and be judged outstanding by a panel of experts. Candidate must evaluate results of test and be judged outstanding by a panel of experts.
Low level: Candidate must demonstrate familiarity with above test and evaluate results of test to the satisfaction of a panel of experts.

Instructional Alternatives

- a. Practice in Micro-teaching clinic.
- b. Read prescribed list of books and articles on evaluating listening ability.
- c. Practice evaluating children in actual public school classroom situations.

Listening--Selection of Materials

4. Performance:

Select an approach to teach adjustment of level and speed of listening to the established purpose.

Criterion

Lower level: Given 3 children who have not satisfied the evaluative criterion for the performance, the candidate will select a given number of approaches or materials one or more of which will successfully enable the children to pass the criterion within three lesson's duration

Higher level: Select successful approaches individually for 5 different children.

Instructional Alternatives

- a. Read a prescribed list of books.
- b. Take an appropriate course.
- c. Participate in a micro-teaching clinic situation.
- d. Visit curriculum center containing published and unpublished approaches.
- e. Practice in a public school classroom situation.

Listening--Performance Criteria

Proficiency

5. Performance

Demonstrate ability to physiologically perform the acts necessary for listening.

Criterion

Candidate must pass an audiometer test with or without artificial aid.

Instructional Alternatives

a. Artificially repair any hearing loss.
b. Practice lip reading ability if necessary.

Listening--Knowledge of the process

5. Performance

Knowledge of the hearing, attending, thinking process.

Criterion

High level: Demonstrate knowledge of the auditory, attending, thinking process, including the history of research, prevalent theories and pass an examination on same judged outstanding by a panel of experts.

Low level: Pass examination judged satisfactory by a panel of experts.

Instructional Alternatives

a. Take course in audiology
b. Undergo sensitivity training geared to attending behavior.
c. Read selected list of books on the topics.

Listening--Ability to Diagnose

5. Performance

Diagnose the hearing, attending, and thinking process.

Criterion

High level: Successful completion of number 4 preceeding (diagnose vocabulary). Successfully administer and interpret all parts of an individual audiometer test to 5 children to the satisfaction of a panel of experts.

Low level: Show familiarity with the individual audiometer test and interpret 5 completed auditory acuity examinations to the saitsfaction of a panel of experts.

Instructional Alternatives

a. Complete a course in audiology.
b. Read a manual on the use and interpretation of the individual audiometer.
c. Practice in a micro-teaching clinic situation.
d. Practice in a public school setting.
e. Take a course in diagnosis of difficulties.

Listening--Selection of Materials

5. Performance

Select therapy or prostheses to physiologically perform the acts necessary for listening.

Criterion

Lower level: Given 3 children who have not satisfied the evaluative criterion for the performance, the candidate will select a given number of approaches or materials one or more of which will successfully enable the children to pass the criterion within three lessons'duration.

Higher level: Select successful approaches individually for 5 different children.

Instructional Alternatives

a. Read a prescribed list of books.
b. Take an appropriate course.
c. Participate in a micro-teaching clinic situation.
d. Visit curriculum center containing published and unpublished approaches.
e. Practice in a public school classroom situation.

Reading--Proficiency

1. Performance

Demonstrate ability to establish a purpose for reading.

Criterion

Given 10 titles of reading experiences, e.g., newspapers, drama, novels, technical textbooks, etc., be able to establish at least two different purposes for reading each. For example, purposes could be in terms of evaluation, interpretation, identification, style, review, association, etc.

High level - explain rationale for five purposes for reading 10 different titles and be rated outstanding by a panel of experts.

Low level - identify five purposes for reading to 10 given titles and be rated satisfactory by a panel of experts.

Instructional Alternatives

a. Practice testing out purposes for reading.
b. Read a list of prescribed selections written for various purposes.
c. Take a reading improvement course.

Reading--Knowledge of the Process

1. Performance

Demonstrate knowledge of the process of establishing a purpose for reading.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a score of satisfactory (low level) or outstanding (high level) as rated by a panel of three judges.

Instructional Alternatives

1. Reading list on topic.
2. Field trips to appropriate locations (i.e., master teachers in different classroom situations).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.

5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.)

Reading--Diagnosis

1. Performance

Demonstrate ability to diagnose establishing a purpose for reading abilities and needs.

Criterion

Given information on five children, candidate must design and carry out appropriate research efforts resulting in a clinically acceptable diagnosis of each child's purpose establishing abilities and needs with a rating of satisfactory (low level) or outstanding (high level) by reading clinic personnel (use must be made of informal and formal diagnostic procedure).

Instructional Alternatives

1. Appropriate practicum experience.
2. Observation of master clinicians.
3. Appropriate activities in the learning center, i.e., programmed workbook on reading diagnosis.
4. Courses in tests and measurements, research design and diagnosis, etc.
5. Reading list on topic.

Reading--Selection of an Approach

1. Performance

Demonstrate ability to select appropriate materials and approach (es) to satisfy aim establishment needs of the students.

Criterion

1. Micro-teaching clinic.
2. Appropriate activities in curriculum and learning center (i.e., programmed workbook, T.V. demonstration lessons).
3. Observation of master teachers.
4. Appropriate practical experiences.
5. Methods course(s)
6. Appropriate special clinic (i.e., micro-teaching, strength-training, sensitivity-training).

Reading--Proficiency

2. Performance

Demonstrate proficiency in comprehending reading material containing information which tests the following sub-skills:

a. finding the main idea in any of the areas of communication.
b. seeing sequence of ideas in any of the areas of communication.
c. recalling details in any of the areas of communication.
d. drawing conclusions in any of the areas of communication.
e. making inferences in any of the areas of communication.
f. predicting outcomes in any of the areas of communication.
g. differentiating between fact and opinion in any of the areas of communication.
h. forming an opinion based on information given in any of the areas of communication.
i. seeing relationships in any of the areas of communication.
j. if communication issues from outside source, ascertaining author's intent and mood.

Criterion

Candidate must pass, with a comprehension score of (high level) and (low level), a test battery of three paragraphs each testing the 10 above sub-skills.

Instructional Alternatives

a. Practice with programmed materials in the learning center.
b. Read a prescribed list of books.
c. Take a course in reading improvement.

Reading--Proficiency

2a. Performance

Demonstrate proficiency in selecting and evaluating information.

Criterion

Given three research questions, candidate must indicate 10 sources pertinent to the topic, must provide one sample of pertinent information gleaned from each source to the satisfaction of a panel of judges (high level, outstanding, low level, satisfactory).

Instructional Alternatives

a. Programmed workbook.
b. Course in library science.
c. Independent research efforts.
d. Independent library investigation.

Reading--Proficiency

2b. Performance

Demonstrate proficiency in classifying in reading, such as recognizing organizational patterns, etc.

Criterion

Successful completion of an evaluative instrument to be designed 75% (low level) 95% (high level).

Instructional Alternatives

1. Programmed workbook.
2. Classification games in learning center.
3. Independent practice in analyzing different classification procedures.

Reading--Knowledge of the Process

2. Performance

Demonstrate knowledge of the process of comprehension and critical thinking skills.

a. finding the main idea in any of the areas of communication.
b. seeing sequence of ideas in any of the areas of communication.
c. recalling details in any of the areas of communication.
d. drawing conclusions in any of the areas of communication.
e. making inferences in any of the areas of communication.
f. predicting outcomes in any of the areas of communication.
g. classifying in any of the areas of communication.
h. differentiating between fact and opinion in any of the areas of communication.
i. selecting and evaluating information in any of the areas of communication.

j. forming an opinion based on information given in any of the areas of communication.

k. seeing relationships in any of the areas of communication.
l. if communication issues from outside source, ascertaining author's intent.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a score of satisfactory (low level) or outstanding (high level) as rated by a panel of three judges.

Instructional Alternatives

1. Reading list on topic.
2. Field trips to appropriate locations (i.e., classrooms, reading clinics).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.)

Reading--Diagnosis

2. Performance

Demonstrate ability to diagnose comprehension and critical thinking abilities and needs.

Criterion

Given information on five children, candidate must design and carry out appropriate research efforts resulting in a clinically acceptable diagnosis of each child's comprehension and critical thinking abilities and needs with a rating of satisfactory (low level) or outstanding (high level) by reading clinic personnel (use must be made informal and formal diagnostic procedures).

Instructional Alternatives

1. Appropriate practicum experience.
2. Observation of master clinicians.
3. Appropriate activities in the learning center, i.e., programmed workbook on reading diagnosis.

4. Courses in tests and measurements, research design and diagnosis, etc.
5. Reading list on topic.

Reading--Selection of an Approach

2. Performance

Demonstrate ability to select appropriate materials and approach (es) to satisfy comprehension and critical thinking needs of the students.

Criterion

Given a group of three children who have demonstrated the need for learning to comprehend and read critically candidate will, under observation, select a number of approaches, one or more of which will enable the child to perform the desired act within three lessons (Low level) when a number of approaches are used, (high level), 100% success with first approach for each child.

Instructional Alternatives

1. Micro-teaching clinic.
2. Appropriate activities in curriculum and learning center (i.e., demonstration lessons).
3. Observation of master teachers.
4. Appropriate practical experiences.
5. Methods course(s).
6. Appropriate special clinic (i.e., micro-teaching, strength-training, sensitivity-training).

Reading--Proficiency

3. Performance

Demonstrate proficiency in vocabulary.

Criterion

Candidate must score (low level) 70 per centile (high level) 90% to utilizing local norms on a battery of standardized vocabulary tests.

Instructional Alternatives

1. Participate in a programmed instructions course in vocabulary development.
2. Reading list (including novels, essays, etc., in addition to subject area texts).
3. Appropriate experiences in the learning center (records, tape recording).
4. Course(s) in linguistics and etymology.

Reading--Knowledge of the Process

3. Performance

Demonstrate knowledge of vocabulary.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a score of satisfactory (low level) or outstanding (high level) as rated by a panel of three judges.

Instructional Alternatives

1. Reading lists on topic.
2. Field trips to appropriate locations (i.e., language laboratories).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.)

Reading--Selection of an Approach

3. Performance

Demonstrate ability to select appropriate materials and approach(es) to teach vocabulary.

Criterion

Given a group of three children who have demonstrated the need for learning to use vocabulary maturational level in reading the candidate will, under observation, select a number of approaches, one or more of which will enable the child to perform the desired act within three lessons (Low level). When a number of approaches are used, (high level), 100% success with first approach for each child.

Instructional Alternatives

1. Micro-teaching clinic.
2. Appropriate activities in curriculum and learning center (i.e., tape recordings, records, published materials.)
3. Observation of master teachers.
4. Appropriate practical experiences.
6. Appropriate special clinic (i.e., micro-teaching, strength-training, sensitivity-training).

Reading--Proficiency

4. Performance

Demonstrate ability to adjust levels and speed of reading to the established purpose.

Criterion

Given three types of material, a novel, a textbook, and a poem or essay, dealing with abstract ideas, candidate must adjust rate of reading accordingly and make comprehension scores of outstanding (high level) and satisfactory (low level) to the satisfaction of a panel of judges.

Instructional Alternatives

1. Reading list on topic.
2. Field trips to appropriate locations (i.e., reading study centers).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.).

Reading--Knowledge of the Process

4. Performance

Demonstrate knowledge of the process of adjusting level and speed of reading to the established purpose.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a total score of satisfactory (low level) or outstanding (high level) as rated by a panel of three judges.

Instructional Alternatives

1. Reading list on topic.
2. Field trips to appropriate locations (i.e., reading study centers).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.).

Reading--Diagnosis

4. Performance

Demonstrate ability to diagnose adjusting level and speed of reading abilities and needs.

Criterion

Given information on five children, candidate must design and carry out appropriate research efforts resulting in a clinically acceptable diagnosis of each child's adjusting level and speed of reading abilities and needs with a rating of satisfactory (low level) or outstanding (high level) by reading clinic personnel (use must be made informal and formal diagnositc procedures).

Instructional Alternatives

1. Appropriate practicum experience.
2. Observation of master clinicians.
3. Appropriate activities in the learning center, i.e., pro-

grammed workbook on reading diagnosis.
4. Courses in tests and measurements, research design and diagnosis, etc.
5. Reading list on topic.

Reading--Selection of an Approach

4. Performance

Demonstrate ability to select appropriate materials and approach(es) to satisfy adjusting level and speed of reading to established purposes needs of the students.

Criterion

Given a group of three children who have demonstrated the need for learning to adjust speed and ability to establish purpose candidate will, under observation, select a number of approaches, one or more of which will enable the child to perform the desired act within three lessons (Low level). When a number of approaches are used, (high level), 100% success with first approach for each child.

Instructional Alternatives

1. Micro-teaching clinic.
2. Appropriate activities in curriculum and learning center.
3. Observation of master teachers.
4. Appropriate practical experiences.
5. Methods course(s).
6. Appropriate special clinic (i.e., micro-teaching, strength-training, sensitivity-training).

Reading--Proficiency

5. Performance

Demonstrate proficiency to phsyiologically perform the acts necessary for reading.

Criterion

Candidate must satisfactorily perform on the battery of tests with an individual telebinocular.

Instructional Alternatives

1. Examination by an ophthalmologist.
2. Satisfactory completion of a routine physical examination.

Reading--Knowledge of the Process

5. **Performance**

Demonstrate knowledge of the process of physiology of Reading.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a total score of satisfactory (low level) or outstanding (high level) as rated by a panel of three judges.

Instructional Alternatives

1. Reading list on topic.
2. Field trips to appropriate locations (i.e., medical research lab).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.)

Reading--Diagnosis

5. **Performance**

Demonstrate ability to diagnose child's physiological reading needs.

Criterion

Given five children, candidate must accurately administer and interpret the ophthalmic telebinocular test (high level) or given three completed record forms of individual telebinocular examinations, candidate must interpret the results to the satisfaction of a trained clinician (low level).

Instructional Alternatives

a. Practice with interpreted record forms.
b. Reading a programmed text on topic.
c. Practice administering telebinocular tests.
d. Studying telebinocular manuals.
e. Observation and/or practicum in reading clinic.

Reading--Selection of an Approach

5. **Performance**

Demonstrate ability to select appropriate materials and approach(es) to satisfy physiological reading needs of the students.

Criterion

Given a group of three children who have demonstrated the need of vision correction, candidate will, under observation, select approach and a referral procedure to be followed to the satisfaction of a panel of trained reading clinicians: low level - satisfactory elvaluation, high level - outstanding evaluation.

Instructional Alternatives

1. Observation in several school and clinic settings.
2. Reading list on referral procedures.
3. Appropriate practical experience.

Reading--Proficiency

6. **Performance**

Demonstrate proficiency in ability to use information (study skills, i.e., summarizing, classifying, outlining, test taking, memory training, time-scheduling).

Criterion

Given the minimal college entrance requirements one candidate must present evidence of having met them. Low level, above evaluation, high level, 90% score on evaluative instrument to be designed.

Instructional Alternatives

1. Standard accredited high school education or its equivalent.
2. Self-directed practice in any or all of the study skills.
3. Programmed workbook.

Reading--Knowledge of the Process

6. Performance

Demonstrate knowledge of the process of using information study skills.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a score of satisfactory (low level) as rated by a panel of three judges.

Instructional Alternatives

1. Reading list on topic.
2. Field trips to appropriate locations (i.e., learning centers, demonstration classes).
3. Development and carrying out of a pertinent research activity or topic.
4. Appropriate course or courses.
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.)

Reading--Diagnosis

6. Performance

Demonstrate ability to diagnose students' abilities and needs in the study skills area.

Criterion

Given information on five children, candidate must design and carry out appropriate research efforts resulting in a clinically acceptable dianosis of each child's study skills abilities and needs with a rating of satisfactory (low level) or outstanding (high level) by reading clinic personnel (use must be made of informal and formal diagnostic procedures).

Instructional Alternatives

1. Course in study skills.
2. Selected reading list.
3. Appropriate activities in the learning center.
4. Self-directed practice.
5. Development of a study-skills inventory.

Reading--Selection of an Approach

6. Performance

Demonstrate ability to select appropriate materials and approach(es) to satisfy study skills needs of the students.

Criterion

Given a group of three children who have demonstrated the need for learning to use study skills effectively candidate will, under observation, select a number of approaches, one or more of which will enable the child to perform the desired act within three lessons, (Low level). When a number of approaches are used, (high level), 100% success with first approach for each child.

Instructional Alternatives

1. Micro-teaching clinic.
2. Appropriate activities in curriculum and learning center (i.e., films, T.V. tapes, published materials, reading lists).
3. Observation of master teachers.
4. Appropriate practical experiences.
5. Methods course(s).
6. Appropriate special clinic (i.e., micro-teaching, stength-teaching, sensitivity-training).

Reading--Proficiency

7. Performance

Demonstrate proficiency in decoding written symbols.

Criterion

Given the Cooperative Reading Test or some yet-to-be-devised evaluative instrument, using local norms candidate will attain a total score at the 75th percentile (low level) or 95th percentile (high level).

Instructional Alternatives

1. Participate in a reading improvement course.
2. Participate in a programmed instruction course in the learning center.
3. Develop a personal reading instructional program.
4. Read from a suggested reading list or topic.

Reading--Knowledge of the Process

7. Performance

Demonstrated knowledge of the process of decoding written symbols.

Criterion

Given an essay examination covering history of research, current theories and current knowledge and interdisciplinary nature of the process, candidate will attain a score of satisfactory (low level) or outstanding (high level) as rated by a panel of three judges.

Instructional Alternatives

1. Read a suggested reading list or topic.
2. Take a series of field trips to appropriate locations (i.e., basic research projects.)
3. Develop and carry out a pertinent research activity on topic.
4. Take an appropriate course.
5. Attend an interdisciplinary seminar (i.e., medical, psychological, historical, etc.)

Reading--Diagnosis

7. Performance

Demonstrate ability to diagnose abilities and needs of the students.

Criterion

Given information on five children candidate must design and carry out appropriate research efforts resulting in a clinically acceptable diagnoses of each child's decoding abilities and needs with a rating of "satisfactory" (low level) or "outstanding" (high level) by reading clinic personnel. Use must be made of informal and formal diagnostic procedures.

Instructional Alternatives

1. Appropriate practical experience.
2. Observation of master clinicians.
3. Appropriate activities in learning center (i.e., programmed workbook on reading diagnosis, T.V. tapes, etc.)
4. Courses in tests and measurements, research design, diagnosis, etc.
5. Reading list on topic.

Reading--Selection of an Approach

7. Performance

Demonstrate ability to select appropriate materials and approach(es) to satisfy decoding needs of the students.

Criterion

Given a group of three children who have demonstrated the need for learning to decode, candidate will, under observation, select a number of approaches, one or more of which will enable the child to perform the desired act within three lessons, (Low level). When a number of approaches are used, (high level), 100% success with first approach for each child.

Instructional Alternatives

1. Micro-teaching clinic
2. Appropriate activities in curriculum and learning center

(i.e., different publishers' approaches, T.V. tapes of lessons).
3. Observation of master teachers.
4. Appropriate practical experiences.
5. Methods course(s).
6. Appropriate special clinic (i.e., micro-teaching, strength-training, sensitivity-training).

Speaking -- Performance Criteria

Performance: Proficiency

Demonstrate proficiency in establishing the main idea in speaking.

Criterion

Given a series of five topics, candidate must select five different speech activities to perform (such as a speech, a conversation, an interview, etc.) and must communicate the main idea within the context of this activity. Candidate will have time limit of 5 minutes to convey the main idea to the satisfaction of a majority of a panel of 3 raters.

Low level: satisfactory rating
High level: Outstanding rating

Alternate Routes

1. Micro teaching clinic
2. Programmed workbook on establishing main idea
3. Participation in debates and discussions
4. Participation in a public-speaking workshop
5. Participation in the culture-exchange program

Performance: Knowledge of the Process

Demonstrate knowledge of the process in establishing the main idea in speaking.

Evaluation

Given an essay examination, candidate will write a description of the current and pertinent research, theories, and knowledge. Candidate will describe the interdisciplinary aspects of the process (low level) candidate will further demonstrate ability to break a skill into its component parts, leveling it from the simple to the complex, the familiar to the unfamiliar, the concrete to the abstract.

Alternate Routes

1. Reading list on topic
2. Field trips to appropriate locations
3. Development and carrying out of a pertinent research activity or topic
4. Appropriate course or courses
5. Interdisciplinary seminar or seminars (i.e., medical, psychological, historical, etc.)

Performance: Diagnosis

Demonstrate ability to diagnose abilities and needs in establishing the main idea in speaking.

Evaluation

Given information on five children, candidate must design and carry out appropriate research efforts resulting in a clinically acceptable diagnosis of each child's abilities and needs with a rating of satisfactory (low level) or outstanding (high level) by expert personnel (use must be made of informal and formal diagnostic procedures).

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Performance: Select approach and materials

Select approach and materials for each of the reading and language arts areas and skills. Demonstrate ability to select appropriate materials and approach(es) to satisfy the needs of the students in establishing the main idea in speaking.

Evaluation

Given a group of three children who have demonstrated the need for learning to perform the particular skill, candidate will, under observation, select a number of approaches, one or more of which will enable the child to perform the desired act within three lessons. (low level: the approach(es)) takes into consideration the individual needs of the child, and is conducted in a manner producing rapport with the child; high level: the approach is judged to be both imaginative and appropriate. Original and creative techniques are introduced.

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7. Curriculum censtruction activities
8. T.V., film, and other kinesthetic and extra-verbal activities

Performance: Proficiency

Demonstrate proficiency in establishing sequence of ideas in speaking.

Criterion

Given an unordered list of facts or ideas, cnadidate will, after 5 minutes preparation time, make an oral presentation (in any form: speech, poem, story) using these facts or ideas in an approved sequence (as judged by a qualified rater)

Low level: simple sequence any form
High level: specified forms-imaginatively presented

Alternate Routes

1. Course in public speaking
2. Programmed workbook on sequence
3. Reading list on topic

Performance: Knowledge of the Process

Demonstrate knowledge of the process in establishing the main idea in speaking.

Evaluation

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8. T.V., film, and other kinesthetic and extra-verbal activities

Performance: Proficiency

Demonstrate proficiency in communicating fact and opinion in speech.

Criterion

Given three topics, candidate will, after half an hour preparation time, make 2 oral presentations demonstrating speaking on the topic factually and giving opinion. The presentations will each be of 3 minutes duration. A panel of 3 raters will decide on low-level and high-level.

Alternate Routes

1. Seminar on propaganda and/or semantics
2. Practicum experience in politics, acting social services
3. Programmed workbook on communicating fact and opinion

Performance: Knowledge of the Process

Demonstrate knowledge of the process in establishing the main idea in speaking.

Evaluation

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Performance: Proficiency

Demonstrate proficiency in using vocabulary to communicate verbally to the intended audience. Included here is speed, level, tone, and projection as well as choice of words.

Criterion

Given 3 separate groups of students (out of many possible choices - in a simulated situation) each representing a different maturational level or sub-culture, and given a concept to convey, candidate will make a different 5 - 15 minute oral presentation (time to be determined by wish of the candidate) conveying this concept in language appropriate to the specific audience. Candidate will have as much preparation time as he requires. The simulation team will rate the performance adequate (low level) or outstanding (high level)

Alternate Routes

1. Participation with the simulation teams
2. Participation in the culture exchange program
3. Participation in the various institutes and clinics (micro-teaching, strength & sensitivity training, rural education, urban education, etc.)
4. Programmed workbook in vocabulary
5. An extensive reading list
6. An intensive reading list

Performance: Knowledge of the Process

Demonstrate knowledge of the process in establishing the main idea in speaking.

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Performance: Proficiency

Demonstrate proficiency-physiological act of speaking

Criterion

Candidate must pronounce a list of 25 words in isolation, and must read five sentences to the satisfaction of a panel of 3 raters.

Alternate Routes

1. Use of the tape recorder to analyze one's own speech needs
2. A course in speech (including speech organs, phonics, etc.)
3. Participation in drama experiences

Performance: Knowledge of the Process

Demonstrate knowledge of the process in establishing the main idea in speaking.

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MODEL
ELEMENTARY
TEACHER
EDUCATION
PROGRAM

APPENDIX II

School of Education
University of Massachusetts
Amherst, Massachusetts 01002

BR 8-9023
PA-24
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APPENDIX II

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SCIENCE APPENDIX

CONTENT AREAS

Mathematical Background
  proportions -- square and square root -- pythagroean theorem -- sine and cosine -- averages -- radian measure -- vectors
Units of Measurement
Velocity
Momentum
Forces
Mass, Weight, and Gravity
Work
Energy
Levers
Pulleys
Rotation
Hydrostatics
Bouyancy
Heat
Waves
Light
Sound
Electricity
Magnetism
Relativity of Motion
Atomic Structure

The following are performance criteria to check the knowledge in certain content areas of physics. Under each area a number of questions have been asked and an experiment proposed, the purpose being to try to identify the level of knowledge that the teacher in training has at his or her disposal. The need to identify levels of knowledge comes from having to qualify the teacher as either a generalist or specialist within the area of science.

The questions try to pin down an understanding of the basic concepts in physics, basics that are often lost in concentration on formulas and engineering applications that are stressed in many areas of science instruction. It is hoped that by concentrating on these basics the teacher will be supplied with a knowledge of science that can be expressed to students in simple terms and not hidden or glossed over due to a lack of real understanding on the teacher's part -- as seems to be the case too often.

The questions and experiments offer only a sample of what would be used in practice to determine a level of competency. The number of questions and experiments for each area would be expanded to 30 questions, I and II levels being combined, and three experiments. A generalist would be expected to score 80% on the level I questions and 80% on the level I questions on the experiments. A specialist should score 25 of 30 on the I and II level questions combined and 80% on the level II experiment questions.

The other areas of science would be treated in a similar manner. There is no need to develop these areas completely until it becomes possible to implement the whole program.

Area: Physics Knowledge

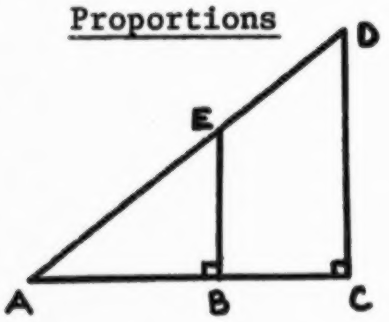
Specific: Content - generalist

Criterion: Given the following sets of questions, the candidate should answer them correctly according to physical laws.

Evaluation: The candidate should be able to answer 80% on the level I questions.

Instructional Alternatives:
1. Programmed learning
2. Work experience in science area
3. Seminar
4. Reading
5. Laboratory
6. Course work
7. CAI
8. Tutoring children
9. Being tutored

I & II Proportions

1. 

$\frac{AE}{EB}$ $\frac{AD}{?}$

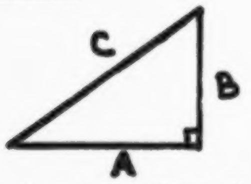
2. AC = 2 AB = 1 AE = 3 AD = ?

I. Square and Square Root

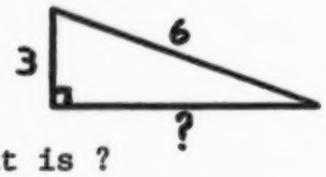
1. $a \times a = ?$
2. What does it mean to square something?
3. To take the square root of something?
4. $(a^2) \times (a^2) = ?$
5. $\sqrt{9} = ?$
6. $\sqrt{a^6} = ?$

II.
1. $(a + b)^2 = ?$
2. $(\sqrt{2}) \times (\sqrt{2}) = ?$
3. $(\sqrt{2}) \times (\sqrt{8}) = ?$
4. $\sqrt{8} = ?$ (simplify)

I. Pythagorus

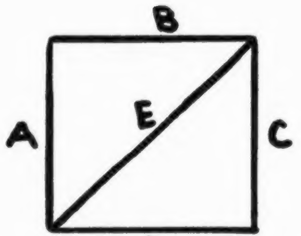
1. 

A = 1, B = 2, C = ?

2. 

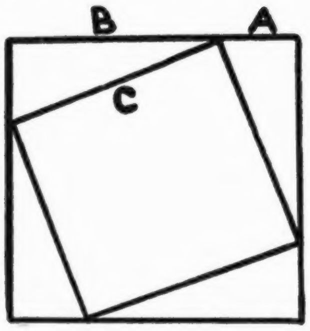
What is ?

II. 1.



How long is E? (A=B=C=D)

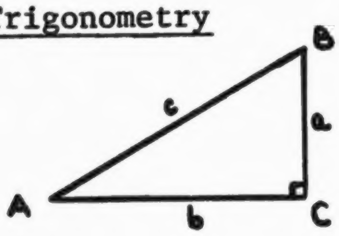
2.



Prove $A^2 + B^2 = C^2$

This is a square inside of a square. Prove pythagorean theorem. Hints: total area is equal to the sum of the areas inside and area of a triangle = 1/2 base times height.

I. Triangle Trigonometry



1. sin A = ?
2. cos B = ?
3. tan C = ?
4. tan A = ?

II. 1. $\frac{\sin A}{\cos A} = ?$

2. $\sin 30^\circ = ?$

3. $\cos 45^\circ = ?$

4. $\tan 45^\circ = ?$

I & II Averages

1. A man goes 2 mph for 1 hour and 4 mph for 2 hours. What is his average speed?
2. What is an "average?"
3. Spend 1 hour per day pumping water during the week but 2 hours per day on the weekend (Friday, Saturday, and Sunday). What

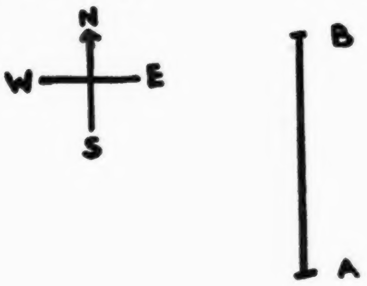
is the average time spent a day pumping water?

I & II Radian Measure

1. If a man goes 1/2 way around a circle, how many degrees has he gone?
2. How much of the circumference has he covered?
3. Does 1/8 of the circumference always equal 45^o?
4. Could we measure degrees as fractions of the circumference?
5. Lets say that a radian of angle is the amount of angle covered in traveling one radius of length around the circumference. How many degrees is 2π radians? π radians?
6. If I travel π radians around the edge of a circle of radius $\frac{2}{\pi}$, how far have I traveled?

I. Vectors

1. A ball rolls across a field at a velocity of 3 mph north. How far from the starting point is it after an hour? What way?
2. Same ball -- same velocity north -- but now there is a cross-wind that blows it east at 4 mph. How far does it go? In what direction?
3. What are the components of the velocity?
4. What is the resultant velocity?



II. 1. An airplane flies from A to B, which is on the N-S line and the total distance is 100 miles. If he flies at 500 mph north, but there is a wind blowing to the east at 50 mph, how does he get from A to B?
2. How does he correct his direction?
3. What is his new velocity? (Use degrees to give direction)

Units

I. 1. Name some basic units. (Ans. gm, kg, hr., sec., m, ft, yd, etc.)

2. What is the difference between a basic quantity and the units

of that quanitity? (Ans. units are arbitrary -- basic quantities don't change.)

3. 1 foot = 4 "looches," how many "looches" long is a football field?

II. 1. What are the units of force?
2. Is force a basic quantity?
3. Why use the cgs or mks system of units? (Easy conversion factors.)

Velocity

I. 1. How is velocity different from speed?
2. You drive from Florida to New York 800 miles in 16 hours. What is your average velocity?

3. $\vec{V} = \vec{Vx} + \vec{Vy}$ $\vec{Vx} = 3\vec{i}$ $Vy = -4\vec{j}$ draw $\vec{V}$ as a vector -- show components.

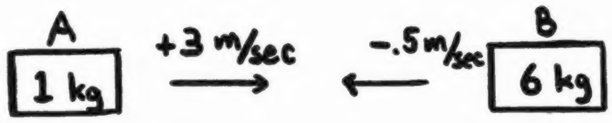
II. 1. What is the average velocity of a person on the outside edge of a merry-go-round? (radius = 20 feet, 12 rpm)
2. What is the person's average speed?
3. Define average velocity. (Ans. average displacement **per time**.)

4. $\vec{V} = \vec{3i} + \vec{5j}$ What is the speed?

Momentum

I. 1. Push a toy car across the floor. What keeps it going after you let go? (Ans. inertia of motion or momentum)
2. Why does a car need a push to move it? (Ans. inertia of rest or momentum.)
3. Which has more momentum, a 2 lb. block or a 1 lb. block when both are sitting still? (Ans. 0 for both.)
4. What about inertia of rest? (Ans. 2 is twice.)
5. If 2 lb.'s is going 1 mph and 1 lb is going 4 mph, which has the most momentum? How much more?
6. Why use seat belts? (Relate to momentum.) (Simple answer ok - nothing hard.)

II. 1.



What is the total momentum of A + B?

2. A and B are on frictionless surfaces -- what happens after they hit? (Ans. No motion)
3. You are on a railroad car and spit a wad of chewing gum north with a velocity of 10 meters/sec. -- the gum you spit out weighed 1 gm. The tracks run north-south and there is no friction. You and the car weigh 1000 kg. How fast is the car moving and which way?
4. Why is a truck safer than a VW in a headon crash?

Forces

I. 1. How hard is the floor pushing on you?
2. Why don't you move upward if it pushes on you? (Ans. forces are equal -- floor is a passive force.)
3. Slide a block of wood across the floor -- what stops it? (Don't hit the wall!) (Ans. frictional force)
4. Push a VW up to 5 mph. Push a truck to 5 mph. Which was harder? Why? (Ans. $F = ma$.)

II. 1. $\vec{F} = m \frac{\Delta \vec{V}}{\Delta t}$ An object has a constant speed $\neq 0$ but there is a force acting on it at all times. Describe such a situation. (Ans. centripetal force.)
2. Why do you "cushion" the fall when you catch a pop-fly? (Ans. change the momentum slowly to decrease the force of the ball on the glove -- less pain.)
3. Is acceleration a vector?
4. 1 kg goes from $V = 0$m/sec. to $V = 10$m/sec in 2 seconds. What is the acceleration? (Assume constant acceleration.)
5. What was the force used?

Mass and Weight and Gravity

I. 1. Which has more mass, 1 lb. of lead or 1 lb. of H_2O?
2. Which is easier to move?
3. Which weighs the most on the moon?
4. What is the weight on the moon?
5. Are the masses more or less on the moon?
6. Mass $= 1$ kg Acceleration $= 1$ m/sec^2 What force is acting if we are on the earth? If we are in outer space?

II. 1. $F = G \frac{m_1 m_2}{r^2}$ -- this gives the gravitational force between any two masses. How does it explain the fact that 1 kg and 2 kg both hit the ground at the same time when dropped from the leaning tower of Pisa?

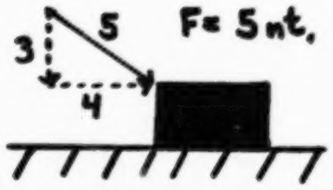
2. Why is the acceleration of gravity the same for all masses?
3. Why can we talk about a 1 kg "weight" and not worry about being wrong as long as we stay on the earth?
4. Approximately how much does a 1 kg "weight" weigh on the moon?

Work

I. 1. How much work does a man do when he pushes on a concrete wall for one hour?
2. Jim pushes a VW 1 mile. Tom pushes a VW 2 miles. Which one does the most work? How much more?
3. Lift 10 lbs. three feet from the ground. How much work did you do?
4. Lift 1 lb. 2 feet. Lift 1/2 lb. 4 feet. Which job required the most work?

II. 1. Tom pushes a VW 100 meters with Jim sitting on the roof. Tom pushes with a force of 50 nts and Jim's mass is 100 kg. How much work is done.

2.



This block is moved along a floor a distance of 3 meters with F always acting in the same direction. How much work is done?

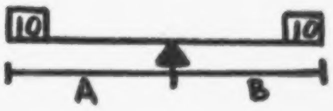
Energy

I. 1. Can an object contain energy while sitting still? Is it doing work?
2. 1 kg. is traveling 3 m/sec. How much work was done on the mass? How much energy does it have?
3. Throw a ball to a person on the third floor of an apartment building. How much energy does the ball have as compared to when you let go of it if it just made it to the third floor?
3. How fast is it going as compared to when you let go of it if the man drops it back down?
5. Smash a spring -- does it have energy?

II. 1 A spring was compressed 5 cm. When released, it tossed 20 gms. 10 cm. above its compressed position. How much energy was in the spring?
2. What was the speed of the mass as it left the spring?
3. Drop a 1 lb. ball from 20 feet up. How fast is it going when it hits bottom?
4. Tom pushes his wagon with a 5 nt. force for 2 meters and then lets it go. How fast is the wagon going?

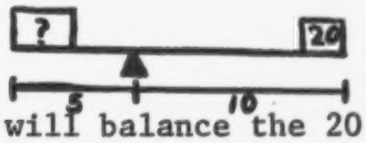
Levers

I. 1.



The weights balance. What can you say about A and B?

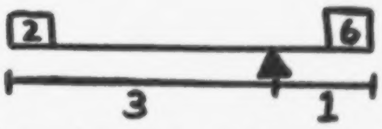
2.



What will balance the 20 gm. weight?

3. Move the right end up one foot. How far does the left end move?

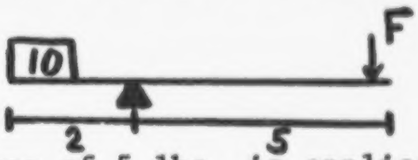
II. 1.



If the six lbs. moves one foot up, how much potential energy does it gain?

2. How much P.E. does the 2 lb. block lose?

3.

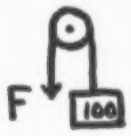


A force of 5 lbs. is applied on the right side for a 3 foot distance. How much work does it do?

4. How far does the 10 lbs. move?
5. What is the force on it?
6. What is the work done on the block?
7. If the force quits after 3 feet, how fast is the 10 lbs. moving?

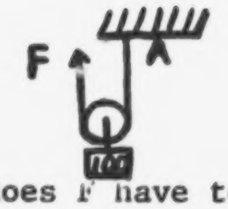
Pulleys

I. 1.



What does F have to be to lift the weight?

2.



What does F have to be to lift the weight?

3. What is the force exerted on the support A in I.2?

II. 1. Why does a pulley increase the force?
2. If a man pulls on the rope in the I.2. question for a distance of 2 feet, how much work does he do?
3. How much does that lift the weight?
4. How much work is done on the weight?
5. Is the energy conserved?

Rotation

I. 1. A person has a mass of 100 kg. and is on the edge of a merry-go-round. Radius = $10/\pi$ meters -- rotates 6 times/minute. What is man's momentum at a given instant? Is it changing?
2. What is his average momentum?
3. How much energy does he have?
4. What forces are acting on the man?
5. Are the forces doing any work?
6. What is the man's rotational speed? (In radians)

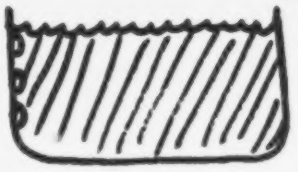
II. 1. Tie a string to a rock and swing the rock around in a circle. Is there a force on the rock?
2. What happens to the rock if the string breaks?
3. Is the rock's velocity constant?
4. Roll a block of wood (round, cylinder block) down a plane. ($I = \frac{1}{2} MR^2$)
5. What are the two kinds of energy it has? (Rotational and Translational)
6. How much of each? (Easy if you use $T = Fr = I\alpha$ and $r\alpha = a$. Think of the force down the plane as if the cylinder were a conveyor belt and that force were just holding the block in place. Then increase the force so that the block has translational motion. The difference here is that a and α are related nicely.)
7. Which rolls faster, a 1 kg. cylinder or a 2 kg. one?
8. Does the radius make any difference?

Hydrostatics

I. 1. Which pushes hardest on the table, 1 liter of H_2O in a container 10 cm. to a side or a block of wood which is 5 cm. x 5 cm. x 40 cm. -- 1 kg. mass and stands on the 5 x 5 end?

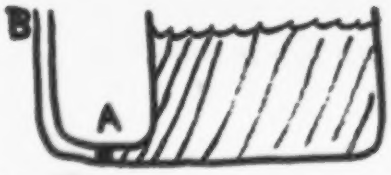
2. Which exerts the greatest pressure?

3.



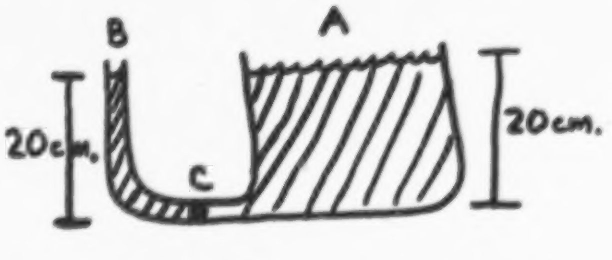
There are three holes in the tank. Which shoots water the farthest? Why?

4.



If the plug at A is removed, what happens?

II. 1.

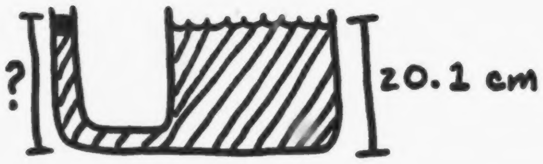


There is a plug in the tube at C that just fits the tube and is free to move. The tube has a cross sectional area of 1 cm^2 (r $\frac{1}{\sqrt{\pi}}$ cm - area = $\pi r^2 = \pi/\pi = 1$ cm^2). What is the pressure on the plug due to the H_2O in B? (Neglect the height difference due to the height of the plug, but tell what the actual case is.)

2. What is the pressure on the plug due to H_2O in A?

3. Does the plug move? What is the total force on C?

4. Now move the plug so that it rests on top of the H_2O at B and no H_2O can pass it on the sides. The plug has mass 1 gm. and is 1 cm. long. How high is the top of the plug?

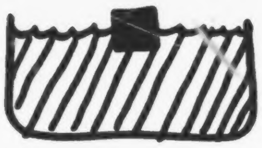


5. How hard does the H_2O push on the plug in dynes?

Bouyancy

I. 1. Why does wood float (Forces ↑ = Forces ↓).

2.



The block is 5 gm. and 10 cm. on a side. Does it float?

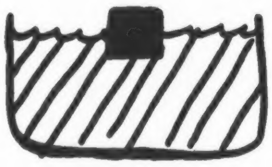
3. What is the pressure on the bottom of the block?

4. How deep did it sink?

5. How much H_2O is displaced?

6. How much does that H_2O weigh?

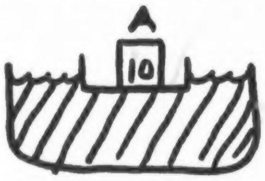
II. 1.

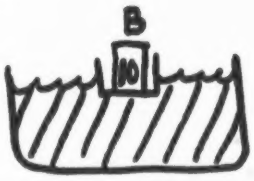


Same block as before, but the liquid has a density of .1 gm/cm^3.

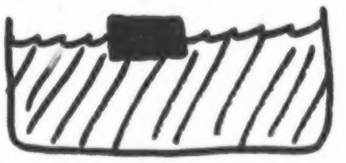
2. Answer I.2, I.3, I.4, I.5, I.6.

3.





Two 10 gm. masses rest on rafts, "A" raft is 100 cm^2 on the bottom. "B" is 50 cm^2 on the bottom. How deep do they sink?



4. The block displaces $20\ cm^3$ and floats. How much H_2O was raised above the water level that existed before the block was put in?

5. What is the force exerted by that "layer" of lifted H_2O? ($F =$ surface area x height raised x $m/cm^3 \times g$) and ($S.A. \times h = 20\ cm^3$).

6. How heavy is the block? (in dynes)

Heat

I. 1. Are molecules and atoms always in motion? (Yes, even at T=0°K -- Quantum Theory)

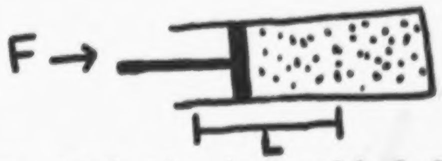
2. Then do all objects have Kinetic energy?

3. Which molecules move fastest -- ones in a 50°F room or ones in 72°F room?

4. Which has more heat put in, steel at 10°C or H_2O at 10°C when they are both raised to 20° C?

5. If heat is just molecules and atoms in motion, how is heat different from plain ole energy? (P.S., it's not).

II. 1.



A force of 1 nt. is applied for L m. -- how much work is done?

2. What happens to the gas? (T ↑)

3. If the specific heat of the gas is 2 calories/mole and there are w moles of gas, how much does the temperature rise?

4. A 50 gm. piece of aluminum at 50°C is put in H_2O at 4°C. What happens? ($C_{Al} = .2$ cal/gm)

5. How much heat is needed to melt 20 gms. of ice at -10°C and

stop just as it's all H_2O at 0°C?

Waves

I. 1. Name the two kinds of waves? (Transverse and Longitudinal)

2. What do transverse waves need that longitudinal waves do not? (A surface to disturb).

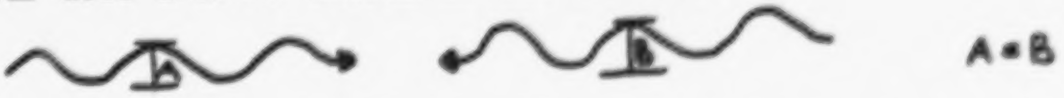
3. What is characteristic of longitudinal waves? (Compression and rarefraction).

4. What does wave length mean? (Distance between the repetition of identical states).

5. What does frequency mean? (Time between repetition of identical states).

II. 1. In H_2O a wave has $f = 30$ cps., λ = (wave length) = .1m How far does a crest travel in one minute?

2.



The two waves meet. What happens when a crest meets a crest?

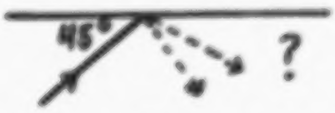
3. What happens when a trough meets a trough?

4. What happens when a trough meets a crest?

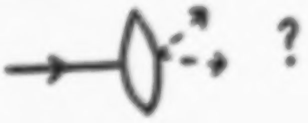
Light

I. 1 Does light act like waves or particles?

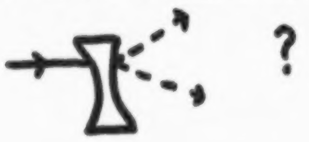
2. Light hits a mirror at an angle of 45°. What angle does it bounce off at?



3. Light goes through a convex lens. Does it bend toward or away from the thick part of the lens?

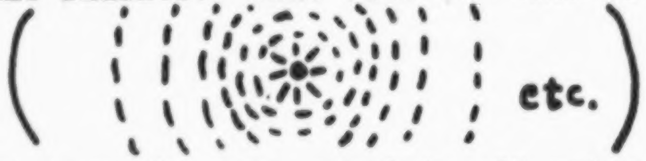


4. Light goes through a concave lens. Does it bend toward or away from the thick part of the lens?



5. If light acts like waves and I send two light waves of equal wave length together so that they meet on a screen, but the crest of one always meets trough of the other, what is seen on the screen?

II. 1. A flashbulb flashes. What does the wave front look like?



2. Does light have the same speed in all materials?

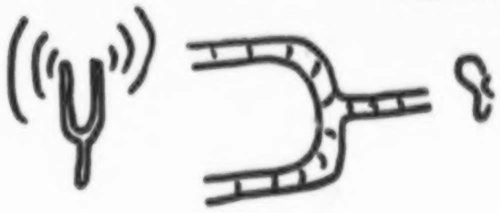
3. Are refraction and the speed of light related?

4. Use Huygens principle and explain refraction in a piece of window glass.

5. What is the "focal point" of a lens?

Sound

I. 1.



Sound waves are sent down equal lengths of pipe. What will the "ear" hear?

2. One length of the pipe is now made 1/2 wave lengths shorter (or longer). What will the "ear" hear?

3. You see lightening and hear thunder about 10 seconds later. How far away was the lightening?

4. How would you make a coke bottle change the note you get from blowing across the top? (Water level)

II. 1. Why does water level control the coke bottle's pitch?

2. How do sound waves travel? (Squished and stretched parts of air).

3. Does sound have the same speed in air as in CO_2?

4. Could you make a lens from a balloon filled with CO_2?

5. Can sound travel through steel? Sawdust?

Electricity

I. 1. What kind of electricity do you make by combing your hair on a cold, dry day?

2. Why do the strands stand up and not cling together?

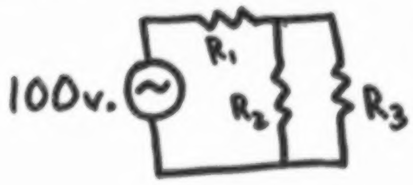
3. What are the two kinds of flowing electricity and what are the differences between them?

4. If I have a 6 volt battery, can I get the most current flow with one or two identical bulbs? (Two in parallel).

II. 1. E = IR. How do you get 20 amps out of 6 volts?

2. Why are fuses used?

3.



$R_1 = 50\Omega$ $R_2 = R_3 = 100\Omega$

How much current flows through R_1?

4. How much through R_2? R_3? $R_2 + R_3$?

5. How does a capacitator work?

6. What is the force between two 6 coul. + charges that are 3 meters apart?

Magnetism

I. 1. What are "lines of force" and how can you "show magnetic lines of force?" (Iron filings)

2. Can you have an N without an S pole?

3. Which poles attract?

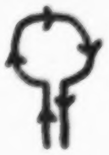
4. Which ones repel?

5. Can you make magnetism from electricity? (Electromagnet)

II. 1. Does a magnet affect electrons? (Just moving ones).

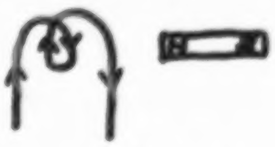
2. What happens if an electron is moving in the same direction as a magnetic line of force? (Nothing)

3.



Electrons flow in the direction shown. Is the magnetic field into or out of the paper?

4.



Electrons flow in the indicated direction. Will the magnet be pulled in or pushed away?

Relativity

I. & II.

1. You are in a railroad car; no windows, and no sound or vibrations from the track. You are tossing a ball up in the air.

Can you tell if the car is moving?

2. If the car is moving and you are in a seat in the car, are you moving with respect to the car? The ground?

3. You are in outer space and no planets are around. From inside your spacesuit you see a chunk of rock go past you. Who was moving, you or the rock?

Atomic Structure

I. & II.

1. What are the three "basic" units of matter?
2. What charges do they have?
3. What holds a nucleus together? (Physicists don't really know, but fake it and say "nuclear forces").
4. If it takes a force to hold an atom together, can you explain where energy comes from when an atom is split? (Work = Fxs)

The following criteria are deemed to be relevant to all levels:

Area: Knowledge - content

Criterion: Give a topic question such as, "what is anti-matter,?" the candidate will find the information and present it to the examiner at a level appropriate to the grade level agreed upon and to the satisfaction of the examiner.

Evaluation: The candidate will be able to find the required information within one day and prepare the information within two days from the time the question is presented.

Alternate routes:
1. Library resource work for scientist
2. Course work in the area of library science
3. CAI
4. Programmed material

Experiments

During the performance of the experiment section of the tasks, the candidate would be expected to do several things:

1. to predict what will happen before doing the experiment.
2. to do the experiment
3. to record and analyze the results
4. to explain the results

In some cases, the level of answer would be indicative of the depth of understanding possessed by the candidate. In most cases, the level II questions are an attempt to describe the depth of level we would expect a specialist to attain.

Area: Knowledge - content and processes

Criterion: Given the following tasks the student will perform them and explain the results according to the levels set forth in each.

Evaluation: Candidate must be able to perform at an 80% level.

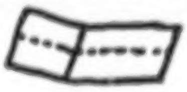
Alternate route:
1. Programmed learning
2. Work experiences
3. Seminars
4. Reading
5. Laboratory
6. Course work
7. CAI
8. Tutoring children
9. Being tutored

Again, level I questions must be answered by the level II person, as well as the level II questions of his own.

Experiments

Velocity -- Materials: stopwatch, ruler, marble, books, two pieces of plywood (one of them 3' x 4').

A marble rolls down the first piece of plywood and across the second piece which is level, then drops off the edge. For the next run the first piece of plywood is left alone but the second piece is slanted at a 30 degree angle so that a marble placed on it would roll at right angles to a marble rolling down the first board.

1.


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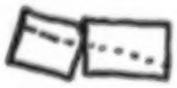


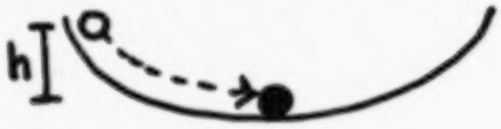
Now, a marble is rolled down the first board and across the second one until it falls off the edge again.

I. 1. What is the marble's velocity in the first trial?
   2. Predict when it will fall off in the second trial.
   3. Explain your results -- (vector components).

II. 1. Predict position marble will fall off on second trial.
   2. Error analysis.

Momentum -- Materials: 2 marbles of equal mass and size, various other masses of same size (spheres), circular track, ruler.

Using the two equal marbles place one at the bottom of the track. Place the other one at a known height and let it roll down into the bottom marble.



Repeat using different masses but maintaining size constant.

I. 1. Predict the result in trial 1.
   2. What is the energy of the system before and after impact?
   3. What is the momentum of the system just before and after impact?
   4. Explain your results ($mgh = 1/2mv^2$).

II. Predict the results in trial 2.

   1. What laws are in question here?
   2. Error Analysis.

Forces -- Materials: Record player, wooden disc "record," blocks of wood, brass, steel, etc.

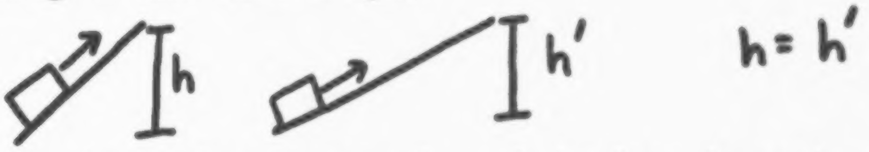
Place the wood, brass, etc. on the wooden disc and plug the record player in at 78 rpm.

I. 1. Predict what will happen.
   2. Explain your results.

II. 1. What is the coefficient of friction between the surfaces?
   2. Place any block on the board where it will "just stay" if the speed is changed to 45 rpm.
   3. Error analysis.

Work -- Materials: wooden block, spring scales, board.

Pull the block up the board, varying the incline on each trial but always going to the same height.



I. 1. Using the scales, how much work is done in each case?
   2. Explain your results.

II. 1. How does the frictional force figure in amount of work lost to friction?
   2. What is the energy put into the system?
   3. Does the work done equal the potential energy of the block at the top of the ramp?
   4. Error analysis.

Energy -- Materials: spring scales, spring, block of wood.

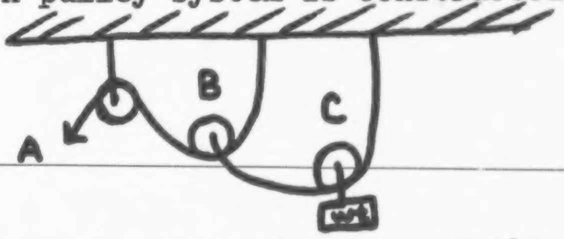
Compress the spring a certain distance. Then let the spring shove the block away.

I. 1. How much energy was stored in the spring? (average force times the distance)
   2. How much work did the spring do on the block?
   3. What is the energy of the system before and after.
   4. Explain your results.

II. 1. What is the work done by the floor on the block?
   2. Is static friction equal to moving friction?
   3. Error analysis.

Pulleys -- Materials: weights, string, pulleys, spring scales.

A Spanish Burton pulley system is constructed

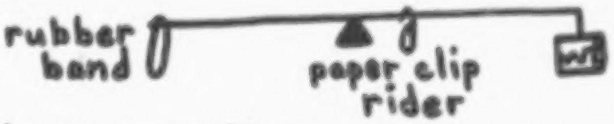


I. 1. What is the mechanical advantage of the system? 4:1
   2. What are the mechanical advantages of the sub-systems? A,B,C.
   3. Pull on A and measure the force and distance. How much work is done on the system?
   4. How high was the weight raised? How much work?
   5. Explain your results.

II. 1. Is the energy of the "system" constant? (What do you call the system?)

2. Error analysis.

Levers -- Materials: thick stick (meter stick), rubber band, ringstands for supporting the balance, 1 known weight, 5 unknown weights, a paperclip. Make and calibrate a scale -- weigh the 5 unknowns.



I. 1. Explain your results.

II. 1. Recognize the use of the rider.
 2. Movable fulcrum to keep the rubber band in the linear region.
 3. Error analysis.

Rotation -- Materials: 1/2 inch diameter dowel rod of varying lengths, board. Roll the dowel rods down the incline.

I. 1. Predict your results.
 2. Explain your results.

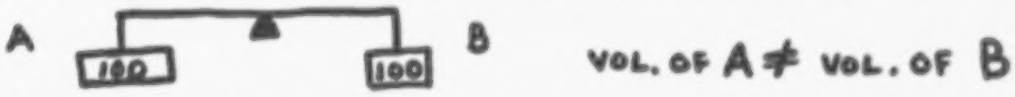
II. 1. Predict the speed of the rods at the bottom.
 2. Is energy conserved within the system?
 3. Error analysis.

Hydrostatics -- Materials: drinking glass, balloon, small aquarium. Investigate water pressure.

I. 1. Should realize that H_2O pushes in all directions.
 2. Explain results.

II. 1. Should predict results.
 2. Should observe that pressure increases with depth.

III. Bouyancy -- Materials: simple balance, two tanks of water.



The above system is in balance. What will happen when the weights are submerged in the water?

1. Predict the results
2. Do the experiment
3. Evaluate the results
4. Analyze the results and re-evaluate the prediction
5. Suggest a method of testing the new hypothesis and if possible, do it.

Bouyancy -- Materials: spring scales, aquarium, two liquids (H_2O and oil), various regular and irregular objects.

Find the density of the objects using the scales. (You have to use a weight to sink the floating objects and measure weight differences.)

I. 1. Predict relative height of floating objects in H_2O as opposed to oil.
2. Check by using the scales.
3. Error analysis.

Heat -- Materials: insulated container, ice, light bulb.
Measure the wattage of the light bulb.

I. 1. Explain your procedure.

II. 1. Check against the manufacturer's wattage.
2. Error analysis.

Light -- Materials: Plastic tank, cardboard, straight pins, two liquids.
Fill the tank with one liquid. Check refraction. Repeat for second liquid.

I. 1. Explain your results.

II. 1. Predict the angle of refraction.
2. Error analysis.

Sound -- Materials: tuning fork, tape, record player, paper disc.
Measure the frequency of the tuning fork.

I. 1. Predict the pattern that will be made.
2. Explain your results.

II. 1. Where is accuracy the best, near the center or the edge?
2. Error analysis.

Electricity Static -- Materials: three solid materials, three cloth materials, an electroscope that measures quantity of charge.

Make nine trials, each cloth on each solid, and determine the charges produced by each.

I. 1. Can you make a general statement relating the type of charge with the substances used?
2. Explain your results.

II. 1. Design an experiment and use it to predict the relative strengths of the charges produced by the different materials.
2. Error analysis.

Electricity Current Flow -- Materials: three electrodes, three acid solutions, beaker, galvanometer.

Determine the amount of current produced by the various combinations of materials and tell which of the electrodes was positive.

I. 1. Make a chart to show your results.
   2. What the variables in the system?
   3. Explain your results.

II. 1. Are the "positive" electrodes always positive when paired with the other electrodes?
   2. Explain the effect of the solutions.
   3. What are the ions formed in solution?
   4. Error analysis.

Magnetism -- Materials: soup dish, cork, needle, magnet, wire, battery. Make a compass. Using only the wire and battery, make the compass point east.

I. 1. What happened when you magnetized the needle? (Ans. lined up the little magnets inside.)
   2. Does the coil alone make a magnet?
   3. Explain your results.

II. 1. Predict the way the coil should be placed to make the needle turn east.
   2. Place the coil around the dish and hook the battery up in such a way that the needle isn't affected.
   3. Error analysis.

Mass, Weight, and Gravity -- Materials: spring scale, small toy truck, phonograph. Demonstrate how "gravity" would be created on a space station.

I. 1. Explain the experiment.

II. 1. Predict the "amount" of gravity created.
   2. Error analysis.

Area: Knowledge, Content

Specific: Processes - ability to identify

Criterion: Given a list of statements concerning a phenomenon the student will be able to identify each statement as either an observation or an inference.

Evaluation: Candidate should be able to perform at a 100% level on the above task.

Instructional Alternatives:
1. Laboratory investigations in process centered program.
2. Reading
3. Messing around in science type of lab program
4. Work study program in research lab
5. Course work
6. Individualized program

Area: Knowledge and Content

Specific: Processes - ability to use

Criterion:
1. Given a graph and statements made concerning the data shown on the graph, the student will be able to identify the statement as:
    a. Statements based on data as recorded
    b. Statements which cannot be made by observing data as recorded.
2. Given data, the student will be able to construct a graph of the type most appropriate for the grade level she will teach.
3. Given a group of objects, the student will be able to classify these on the basis of physical properties into two main groups, and then into these main groups.
4. Given a group of 10 objects, the student will be able to construct a workable key using the minimum number of couplets. (There would be a series of these for each of the science processes.)

Evaluation: Candidate should be able to perform at a 90% level on the above tasks.

Instructional Alternatives: Same as Criterion 1.

Area: Knowledge - content

Specific: Processes - use and applications -- ability to set up problem and show various methods used to solve problem.

Criterion: Given the two pendulum set-ups and the following questions, the candidate will perform and answer questions to the satisfaction of the examiner:

1. List five variables that could affect the rate of swing of the pendulum during a given time period.
2. State an inference for a relationship between one of the variables and the rate of swing.
3. Describe how you would test the influence from Item #2. Use the set-up as a basis for your test of the inference.
4. List names of variables to be held constant in the test described in Item #3

5. What is the name of the variable to be manipulated in test described for item #3?
6. What is the name of the variable which is responding in the test described in item #3?

(This test could also be used in biology, etc. with similar experimental set-ups.)

Evaluation: The candidate will perform to the satisfaction of the examiner at a level of 100% on all questions.

Instructional Alternatives:
1. Laboratory sessions - possibly with CAI
2. Workshops within context of process centered curriculum projects -- AAAS, SCIS
3. Work study program in laboratory
4. Course work

In the entire area of physics (as well as the other areas) focus will be on the analysis of problems and observations of systems, sub-systems, and energy transfer and storage. Analysis of an event will be based upon one's ability to synthesize and to analyze the objects which are interacting and to exclude irrelevant objects or sub-systems. One might elude to a systems approach in this context.

Area: Content - Knowledge - 1

Specific: Processes - observing and analyzing systems

Criterion:
1. Given a heterogeneous solution in which some objects are floating at various levels, the student will explain the phenomenon.
2. Given a system made up of objects in a solution of Alka Seltzer, the candidate will explain the up and down motion of the particle in terms of systems, sub-systems, and changing bouyancy of each sub-system within the system.

Evaluation: Explanations will be given to the satisfaction of the examiner.

Instructional Alternatives:
1. Laboratory experiences
2. Courses
3. CAI
4. Individualized or programmed study

ATTITUDES AND VALUES

No value is seen in setting up a hierarchy for scientific attitudes and values since a person who has anything to do with teaching science should have an understanding of the underlying attitudes and values indigenous to science. The following paragraphs will serve to expand the principles.

Attitudes of Science

Paul Hurd has described a series of attitudes or values, if you will, which characterize one as socially literate regarding science. Much of what follows is a reflection of certain of these ideas and a contradiction of others.

If we are to examine science and the attitudes that are of value to a teacher of science, one must first begin by looking at what science is. Science is, simply put, the observation of nature. Scientists are willing to accept facts as they happen. Science is not wish fulfillment about the way in which one would have the world, but is a willingness to accept the world as it is. One of the most distinguishing features of the scientist is that he is possessed of intellectual honesty. Not all scientists are honest, just as not all men are honest. However, science as an institution places great emphasis on intellectual honesty. Coupled with intellectual honesty, or part of the concept of intellectual honesty, is a willingness to not state answers to questions until evidence presents itself in our observations of nature in the form of an answer to questions. It is a very demanding thing to not draw conclusions about the world when lacking sufficient evidence for such conclusions. It is also very difficult to refrain from offering explanations of nature which are pure invention or are mythical. Science is a search for order, for lawful relations, among the events which occur in nature. Science is not passive. Scientists do not contemplate--they do. When laws are discovered and organized concerning naturally occurring phenomena we deal more effectively with that part of nature described by the laws.

The two fundamental characteristics that distinguish scientists from non-scientists are curiosity and doubt. Curiosity is not so much an attitude as it is a way of asking questions. Sidman describes such curiosity in the following fashion:

> There are differences between every day and scientific curiosity. A child, for example, notices a large number of bees flying about the rose garden. He asks his father, "why are all those bees there?" The father replies, "they are gathering pollen from the roses so that they can make honey." The non-scientific child will stop here, his curiosity satisfied. A boy with a slightly greater scientific potential is likely to continue his questioning: "What is pollen?" "How do they make honey out of it?" "Isn't there any pollen in grass?" "Why do roses have pollen?" If the father hasn't yet lost patience, the budding scientists will come out with a real back breaker. "How do you know?" Here then is the first distinction between scientific and everyday curiosity. Scientific curiosity is concerned with the methods by which the answers to its questions are obtained. The curiosity is not satisfied simply by demonstration that flowers are always present when bees congregate and that flowers bear pollen. Perhaps the bees are attracted by certain colors or perhaps the shape of the petals is important. Perhaps the bees are attracted by certain colors or perhaps the shape of the petals is important. Perhaps the pollen that sticks to the bee's

> leg is only incidental to their search for some substance that makes them attractive to bees of the opposite sex. These possibilities can be resolved only by controlled observation and experiment. Another difference between everyday and scientific curiosity lies in the consequences that follow upon the answers to the initial questions. Everyday curiosity will subside once a direct answer to its first question is obtained. Scientific curiosity, on the other hand, is characterized by a chain reaction. Instead of quieting it the answer to a question only arouses scientific curiosity further. (Sidman, 1960, pages 7 and 8)

Much of what is written about the nature of science has to do with searching for knowledge. Knowledge is nice, however, one of the singular characteristics of science can be expressed as doubt.

> Doubt and knowing are merely different sides of the same coin. In school, great emphasis is placedon 'knowing' and exceedingly little is placed on constructive 'doubting'. Socially speaking, doubters are not so warmly welcomed as the other guests because they are constantly questioning or otherwise 'rocking the boat.' Everyone expects the groom to answer with an affirmative and unequivocal 'I do.' Imagine the chaos when the professional doubter answers 'I possibly do' or 'under some conditions I might.' Fortunately, however, the whole world is not lost to the doubter. There is one profession in which doubting is not only desired but absolutely essential; this field of endeavor is science. Given the opportunity a good scientist will doubt practically anything. A scientist of a few centuries back even doubted that he existed and only after several years of intensive thought, much to the gratification of his wife and children, was he able to convince himself that he did exist after all. But to the scientists doubting is not a game. The questions which scientists ask must be answered if a firm basis of knowledge is to be established. Regardless of the material a scientist encounters or where he encounters it, he keeps asking the same old questions. Who says so? Why? What are the data? Where is the proof? In fact, the scientist asks the same question so often that they become second nature to him and are really crucial attitudes he holds towards the subject matter of his field. Scientific attitudes encountered in one discipline are quite similar to those encountered in another since there are basic tenants to all scientific knowledge. (Whaley, 1967, page 7)

Four basic attitudes for science are (1) empiricism, (2) determinism, (3) parsimony and (4) scientific manipulation. In training teachers of science we can consider the necessity for their holding these attitudes and being able to transmit them effectively to students, regardless of the specific content they are teaching or the age level at which they teach. The attitude of determinism is quite possibly the most fundamental aspect of the scientist's repertoire. Scientists view the world as orderly and lawful. Naturally occurring events have causes. Causes and effects stand in relation to one another. There is no mythical connection or attachment between the cause and an effect. They simply happen together. Scientists spend their careers observing phenomena in order to align causes and effects. Causes can be manipulated and control can be exerted over the outcome. Without this very fundamental view of the world there is no necessity for science.

The principal attitude of science is that of parsimony. To be parsimonious is to be stingy. When events in the world are observed, descriptions of them are phenomenally stingy when made by scientists. What the law of parsimony says is that an account or a description or an explanation of a phenomena should never be more complicated than is absolutely necessary.

Empiricism as a scientific attitude is concerned with using one's eyes to observe events in the world. A scientist does not sit back and think about what the world should be or could be but goes out and sees how it is. Until one has gone to look at the world he withholds judgment about that aspect of the world.

Scientific manipulation has to do with the determination of cause effect relationships. One can only arrive at the conclusion that one event in the world stands as a cause of another by changing the first and seeing what happens to the second. Unless this sort of scientific manipulation of naturally occurring events is done, no scientifically legitimate statements are possible regarding the relationship between the two events. Science is not a place for superstitious behavior.

The question now arises about how we produce individuals who can be labeled as hav[illegible] these scientific attitudes. This requires that we examine what we [illegible] by having an attitude. A parsimonious and empirical description of an attitude rests in certain differentiated verbal responses. That is, we identify an individual as having an attitude on the basis of what he says about certain events in the world. The test for identifying an individual holding or possessing the attitudes described above is to present events in the form of textual material and observing the verbal responses about that material. The techniques and procedures available in programmed instruction can do two things in producing these attitudes in student teachers. It can develop or shape up the desired repertoire and can test for degree and accuracy of differentiation.

Of concern as well, is the production of individuals who can not only verbalize with respect to these attitudes but can transmit them to students. The obvious and hopefully simplest way of doing this is to place individuals in an environment after the behavioral repertoire has been established in which they are required to transmit these attitudes. This would suggest a very well programmed sequence of contacts between the student teacher and elementary students. What concerns us, however, is not the techniques for developing these repertoires but what the verbalizations are.

We can start by taking as a terminal behavioral outcome the kind of thing that follows from a student's going through Whaley's programmed text. A block of textual material is presented which requires, at first, very simple and very gross differentiations between the proper and the improper meeting of the demands of the four attitudes. A progression of this material leads directly to highly sophisticated and very subtle differentiations between failures and successes to meet the requirements of these attitudes. This does not rule out other alternatives for producing appropriate attitudes of science but we can use the differentiated responses based on the four attitudes with respect to scientific textual materials as the terminal outcome and then build a tree of alternatives for arriving at this objective. The resulting performance criterion might then take form as follows:

Area: Attitudes and Values

Attitude: Empiricism, parsimony, determinism and scientific manipulation

Criterion: Given an article from Donald Whaley's book, Attitudes of Science, the student will identify the exact point (s) at which the writer violates the attitudes of empiricism, etc.

Evaluation: Candidate must be able to find at least one violation of each of the attitudes in the article.

Instructional Alternatives:
1. Programmed instruction via Whaley-type program
2. CAI
3. Reading papers for critical review
4. Experience with scientists preparing papers
5. Research experience
6. Writing results of laboratory work of others and self

Area: Social Attitudes and Values

Attitude: --appreciates the efforts to guide scientific investigation and control technology development for the well-being of mankind (medicine, agriculture and public health are illustrative).

Criterion: Can list agencies which guide science investigation, etc. for well-being of mankind

Evaluation: Should be able to list at least five correct agencies as judged by examiners

Instructional Alternatives:
1. Programmed or CA Instruction
2. Historical research

3. Individual Study
4. Writing fictitious or factual materials
5. Working with historians and/or social researchers

Area: Social Attitudes and Values

Attitude: understands that innovation in science and technology may rearrange the political relations and power balance of the world.

Criterion: can cite and defend choice of examples from the past decade which show rearrangement of political relations and power balance.

Instructional Alternatives: Same as #2

Area: Attitudes and Values

Attitude: ---understands the social, political and economic contexts essential to maintaining the integrity of science.

Criterion: Write a short story depicting effects of complete government control over science.

Evaluation: Story judged for relevence by panel of experts

Instructional Alternatives: Same as #2

SOCIAL GOALS FOR AN EDUCATION IN THE SCIENCES

Paul DeHart Hurd in an unpublished mimeographed paper states the need very aptly and succinctly for consideration of social goals for science teachers.

"The sociology of science has two main purposes. Bernard Barbar and Walter Hirsch have described these as follows: the first is to understand science "as a social phenomenon--its essentially social character, its sociohistorical development, its patterns of organization, the social influences on the processes of discovery and the social responsibilities of science. The second purpose is to contribute to the further development of the sociology of science as a specialized field of study of great intellectual and practical importance." Within these broad purposes of the sociology of science are to be found a range of "understandings" and "attitudes" important to the citizen who wishes to intellectually participate in the culture of our time.

Area: Social Values and Attitudes

Attitude: recognizes that science reflects as well as stimulates the course of social and economic development: recognizes the role of science in the progress of civilization.

Criterion: Given a history or social study text (elementary) the candidate will develop a conceptually oriented lesson showing how science has played a role in the progress of civilization.

Evaluation: The level to which the student shows competency will be judged by a panel of experts.

Criterion: Given a list of historical events, some of which have been affected by science and technology, the candidate will differentiate between the two.

Evaluation: When there is disagreement, the candidate will explain to the satisfaction of the examiner.

Instructional Alternatives:
1. Work with a historian.
2. Discussion with a historian
3. Programmed, CAI
4. Special study

Area: Social Values and Attitudes: ---understands that the course of future developments in society and science is reflected more in scientific than in technological achievements.

Criterion: Given the above statement, the candidate will construct a list of scientific and technological achievement from the last decade to prove or disprove the point.

Evaluation: Candidate should be able to construct a list of at least 10 scientific or technological achievements to prove point as decided by panel.

Instructional Alternatives: Same as above.

Area: Social Attitudes and Values

Attitude: ---recognizes that social and economic inventions may be necessary to keep pace with and to enhance scientific and technological developments.

Criterion: Given a list of developments candidate will list ways which social and economic inventions have succeeded in, attempted or failed to keep pace, e.g.

1. longer life expectancy, population explosion
2. the "pill"
3. industrial polution

Evaluation: Candidate will list 2 items for each development

Instructional Alternatives: Same as #2 and add

1. work with political scientist in independent study.

SKILLS

The skills we are talking about here are the abilities to use instruments and manipulate same to certain accuracies. These are almost too numerous to mention at this point but examples of equipment are listed and examples of performance criteria are given. Physical science only, here:

A. The candidate (Level I) should be able to use with accuracy and safety the following pieces of equipment:

1. balances, triple beam, double pan and equal aim.
2. ammeter, voltmeter, ohmeter.
3. bunsen, fisher and propane burners.
4. optical pieces -- lenses, prisms, mirrors, magnifying glasses.
5. soldering iron
6. tools -- hammer, saw, etc.
7. pulleys and pulley systems
8. timers
9. electroscopes
10. electromagnets
11. thermometers and weather instruments
12. telescope
13. tuning forks

B. The candidate (Level II) should be able to use and/or demonstrate the use of the following with safety and accuracy:

1. balances -- Meter type, analytical type
2. all electrical meters
3. all types of heating devices
4. all listed in I and diffraction gratings, spectroscope
5. soldering iron
6. tools
7. pulleys and pulley systems
8. timers -- electrical, mechanical
9. electroscopes, electrophones
10. electromagnets
11. weather instruments, thermometers -- electric, non-electric, max-min., etc.,
12. telescopes -- refracting, reflecting
13. oscilloscope
14. electrolysis apparatus
15. geiger counter
16. theostats
17. vacuum pumps, manual and electric
18. thermo-couples
19. transformers
20. Wimhurst machines, Van de Graf Generators

Besides these skills the teacher should have skills in:

General Techniques (those marked I are for level I candidates. It is assumed that those candidates attempting level II tasks can also do level I tasks).

cut glass tubing of small diameter I
cut glass tubing of large diameter I
bend glass tubing to a predetermined angle I
make a capillary tube I
use a soldering iron correctly I
saw a board following a line I
drill holes in wood and metal II
fasten pieces of wood together with nails, screws and glue I
use a vernier caliper II
repair an electric light socket I
cut gold or aluminum leaf II
properly adjust and use a Bunsen burner I
mix acids and water I
use rheostat to prevent short circuit in glass cutting etc. II
store magnets I
handle and store sodium & phosphorous I
service a storage cell II
connect wires together I
use a vise I
read blue prints II
use and store paint brushes I
make a sociogram of a class I
twist or screw a stopper into a tube I
twist or screw a glass tube into a rubber stopper I
smell gases by fanning toward the nose I
avoid sucking back of a gas delivery tube I
heat a glass vessel without breaking I
without admitting air, be able to invert a bottle of water with a glass plate over the mouth beneath the water in a trough I
pulverize coarse solids with mortar and pestle I
strip the insulation from a wire I
solder an electrical connection I
make normal & molar solutions II
use a vacuum pump correctly II
use a speed counter I
read a barometer (both mercury & aneroid) I
cut sheet metal I
slide solids into a test tube without breaking the tube I
rotate a bottle when pouring powders from it I
improvise a water bath I
pour liquids from one vessel to another using a glass rod I
use a straight glass tube as a dropper I
lowering a burning substance into a bottle with a deflagrating spoon I
clean glassware with cleaning solution II

use a wire gauge II
use a fire extinguisher I
prevent bumping while boiling liquids I
fire polish glass tubing I
polish sharp edges of glass with wire gauze I
bore a hole in cork I
remove a thermometer from a cork I
siphon from carboys I
fold filter paper correctly I
place dry material in bottom of test tube I
weigh with trip and analytic balances Ii
use spring scales I
clean mercury II
use indicator papers I
connect a 3 way switch I
test and replace fuses I
develop and print pictures II
cut plate glass I
sharpen tools II
write on glass II
use an aspirator II
seal a wire into a piece of glass tubing or rod II
convert Fahrenheit to Celsius & vice versa I

Techniques applying to the Physical Sciences:

make a mercury barometer I
make an air thermometer I
make oxygen & hydrogen generators II
collect gases over water I
use an induction coil II
use a Tesla coil II
titrate with burettes and "read a meniscus" II
use a volumetric pipette II
connect resistances in series & parallel II
connect a voltmeter and ammeter in a circuit correctly I
use a galvanometer for detecting small currents I
operate a cathode ray tube II
make an repair an electroscope I
use an electroscope without breaking the leaves I
do copper plating II
adjust make and break points on induction coil II
connect dry cells in series and parallel I
set up and operate pulleys, levers and inclined planes I
make a simple galvanometer I
disperse light with a prism I
set up Hoffman electrolysis apparatus II
operate a spectrometer II
operate a diffraction grating II
set up a Bunsen photometer II
use a water-cooled condenser II
make a condenser (electrical) II

measure the wave length of a sound wave II
get the boiling point of a substance I
calculate the mechanical advantage of a machine I
fill a balloon with hydrogen I
illustrate Bernoulli's principle I
read a topographic map I
test for limestone I
use a soil sieve I
use an aspirator to evacuate air I
use a "sling" psychrometer I
collect gases lighter than air I
collect gases heavier than air I
measure focal lengths of mirrors II
operate Geissler tubes II
do the borax bead test II
test minerals using flame test, borax beads, blowpipe on carbon block etc. II
make artificial smoke II
read weather maps I
read gas, water & electric meters I
make a wet and dry bulb hygrometer II
use a battery charger or rectifier II
paint flasks with black & aluminum paint I
test substances for hardness
use a dessicator II
use a calcium chloride drying tube II
get a representative soil sample I
use a hydrometer (storage battery & urinalysis) I
test soil for acidity I
make a compass I
magnetize a bar by pounding II
operate a centrifuge II
determine the density of an odd shaped object I

convert from English to metric units & vica versa II
determine the specific gravity of a substance I
use a stop watch I
determine the freezing point of a solution II
determine the relative humidity of a mass of air I
set up and use a steam generator II
determine the boiling point of a solution II
determine the relative humidity of a mass of air I
set up and use a steam generator II

determine the specific heat of a substance II
use a calorimeter II
handle a poisonous gas in a hood II
test for oxygen and hydrogen I
demonstrate destructive distillation II
remove common spots and stains I
seal a test tube I

In addition, certain graphic techniques are necessary, these are:

1. prepare ditto stencils I
2. operate mimeograph and ditto machines I
3. use hectograph I
4. use catalogs in preparation of orders II
5. use handbooks of physics and chemistry II
6. maintain reference shelf and file of materials II

Emergency Measures (First Aid, etc.)

1. treat acid and alkalai burns I
2. treat minor cuts and wounds
3. use a tourniquet
4. treat burns from fire and steam
5. disinfect wounds
6. give treatment for shocks and fainting
7. give artificial respiration
8. remove foreign substance from eyes and wash eyes
9. treat nose bleed
10. stop hemorrhage of peripheral location
11. make a sterile dressing
12. treat for poisoning of various kinds
13. make and give an emetic
14. use various types of fire extinguishers

Examples of performance criteria are:

1. Area - Skills in using physical science instruments, Level I

Criterion:

Given a triple beam balance, a double pan balance, and an equal arm balance of specified accuracy, the student will weigh an object on each and record weights to within 0.1 gm accuracy.

Evaluation: accuracy will satisfy an examiner who will attest to the 0.1 gm accuracy.

2. Area - Skills in using physical science instruments Level I

Criterion: Given a graduated cylinder and some liquid, the student will measure and present for examination, 87 cc of that liquid.

Evaluation: Accuracy will satisfy an examiner who will attest to the accuracy.

Biology

The basic breakdown of the biological area might be as follows: The basic theme is ecology and the central concept is that of the ecosystem -- the whole complex of interactions involving plants, animals, sun, atmosphere, water, soil. Within this central conceptual idea are basic sub-concepts such as:

1. the organism and what it is:
    a. structually
    b. physiologically
    c. genetically
2. life cycles
    a. animals and plants
    b. growth
3. Populations and then relationships -- habitats
4. Communities within populations
5. Recycling of matter in ecosystems
6. Changes in ecosystems
7. Natural selection and evolution

As might be readily obvious, the general nature of the program is that of the Science Curriculum Improvement Study under the direction of Robert Karplus at the University of California in Berkeley and specifically the life science aspect under Dr. Chester Lawson.

It is believed that this approach provides the greatest potential for teachers as well as children to develop a true understanding of the significance of biology.

Earth Sciences

This has traditionally been a polygamous, shotgun marriage between the astronomy, geology, chemistry, physics, etc. The Earth Science Curriculum Project has succeeded in some part in making the topic an integrated marriage. I do not feel that at this time we can improve drastically upon their scheme. This is:

1. The changing earth
    a. prediction of change (patterns)
    b. earth changes and man
2. Materials which make up the earth
    a. chemistry
    b. abundance
3. Measurement
    a. shape
    b. dimensions
    c. inside and out
    d. maps and models
4. Motion
    a. time
    b. tides
    c. sky
5. Fields, Motions, and Forces
    a. magnetism
    b. temperature
    c. gravity
6. Energy flow
    a. energy and change
    b. sources of energy
7. WWeather -- energy and aid movement
8. Water in the air -- weather
9. Fresh and Salt Waters
    a. cycle
    b. motion -- waves and beaches
10. Energy, Moisture, and Climate
11. Erosion and weathering
12. Rock cycles
    a. sedimentation
    b. crustal movement
    c. cyneous rocks
    d. metamorphosis
    3. theories
13. Geologic time
14. Astronomy
    a. moon, sun, and stars
    b. stellar and space evolution
    c. the universe and origin

AESTHETICS APPENDIX

APPENDIX

Following is a brief discussion of how one might teach the awareness and appreciation of different states of motion.

The words we use to describe types of motion are sometimes tactile and imply a kinetic sense of feeling such as smooth or bumpy in reference to riding. More often, however, we use words which describe a sequence of action, such as chase, push, and pull. Such words do not have much descriptive capability to qualify patterns within the visual field that occur when one observes motion.

For an observer there is a three-fold apprehension of motion: 1. a situation where the observer remains stationery and objects move by him (this induces an impression of speed and a changing environment) 2. a situation where the observer moves and the objects around him remain stationery (this induces a sense of a stable environment), 3. a situation where the observer moves along with other objects in the environment (this produces a sense of relative speeds and directions of action).

The procedure that the teacher-trainee would follow in order to operate and record the results of his decisions is as follows:

a) From a numeric keyboard, punch paper tape. The code for punching the tape would be simple and correspond directly with a numbered light in the light display.
b) He would receive as a result of this action a permanent record on the paper tape and a temporary record in the light display itself.
c) After developing a sequence of action he could play back the tape and further edit the tape if he desired.
d) Operation of the paper tape would have two functions: one, turn the light on; and two, route a predetermined signal to the light. For example, instead of having single constant current source available, there would be several, ranging from the very dim to very bright.

Although this type of machine has never been used as an educational vehicle, the advantages of such a tool would be:

a) Its flexibility, even for demonstrating static visual relationships.
b) It would avoid the time-lag associated with cinematography. That is, the time lapse between taking the pictures and seeing them after development. This is a distinct classroom advantage, especially with inexperienced students.

c) It would deal with dynamic visual patterns in a generalized and purely formal manner.
d) Since it deals with basic dynamic visual relations, it would provide background understanding of these relations for cintematographers.

The third goal is the ability to communicate about sensation. Artists are often asked to explain what they feel when performing their art, or constructing it, and often they answer, "I can't put it into words," is heard. An artist must be able to communicate about his art through the media of words, as well as communicate through his art. For one to just view, or hear, or see and never have the opportunity for further understanding is often to be denied some of the value of the art.[1]

The explorations involving various elements of movement are all for the purpose of self-discovery of these elements by the teacher trainee and also to develop the kinetic sensations involved during the execution of those movements. To explore and not find meaning is to not explore at all. Without being aware of his own kinesthetic reaction the trainee cannot build self confidence nor a movement vocabulary to build more complex movements.

All of these studies will allow the students to find movement patterns that are meaningful. Thus, when creating, the material used will be more meaningful to him an his audience.

These explorations of movement must be had before the art of dance can be studied and understood. Movement is the material of dance and a better understanding of the elements of dance will enhance the understanding of dance as an art form.

I. SENSORY EXPERIENCES: exploring movement

RELAXATION-TENSION - The ability to move well is partially governed by ones ability to contract and relax muscles at will-especially those muscles near a joint. When one fails to be able to do this, jerkiness usually results. The proper amount of tension must be incorporated to give the proper meaning to a movement. To do this the performer must have a definite feel of the movement in his own body.

Sessions will be held in sensing movement qualities found in simple movements of pushing, pulling, rising, falling, twisting, turning, shaking, swinging, swaying, bouncing, stretching, collapsing, etc. Stu-

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1. It is important to note here that the human relations task force feels that it is not as important for the individual to express verbally that which he can and does express kinetically. It is felt that non-verbal communication can and should be practiced so that it is just as complete and whole in its communicative power as verbal communication.

dents will be encouraged to be exploratory in changing the elements found in movement--time, space, and force. Each change should bring a new sensation and thus a new movement is recorded in the individuals muscles and mind.

CENTER OF GRAVITY - Knowing where the center of gravity is in motion, and being able to control it is another key to successful movement. Many students are unfamiliar with the location of their center and therefore cannot detect the reasons for failure in movement which often are improper placement of the center or lack of controlling its shift.

Many experiences involving the center of gravity in stationary and locomotive movements will be given to enable the students to sense the force of gravity, inertia, leverage, centripital and centrifugal forces on their center of gravity. Movements based on moving close to ones center will be used utilizing this principle--the closer to center the movement begins the more control over the movement and thus the more fluid the movement will be.

BALANCE - A part of one's knowledge of the center of gravity is one's bodily relation to gravity. When this relation is learned, the trainee will be able to demonstrate a true awareness of balance.

Through various movements the student will experience the principles of balance at work, i.e. the lower the center of gravity, the more stability, and the wider the base of support, the more stability. Most persons think of going down when bending the leg joints and thus the body weight is dropped into the leg causing improper alignment, and consequently loss of balance. When the body weight is kept in the pelvis, (thinking up), the body can function properly and thus balance is certain--thinking up while lowering the body weight insures balance, while thinking down causes loss of balance.

The trainee must be able to allow his mind to govern the actions of his body. No one ever moved beautifully while imagining himself to appear awkward.

TIME-SPACE FORCE - Multiple experiences in defined spatial, rhythmic, and force relationships will be provided to allow the student the opportunity to discover those patterns which are meaningful to him. These three will be dealt with separately, but none can exist without the other. They occur simultaneously in all movement. Practice of these should enhance the trainee's daily movement patterns.

TIME - The time it takes to perform a movement can govern the extent of its success in communicating. An awareness of the pulse time of the movement must be developed. This can be done by setting limitations of confining movement qualities in certain periods of time. Many of these must be done to deepen one's time rhythmic sense.

SPACE - The trainee will develop awareness of space; an attitude toward it. Do we move it, or are we free to move in it? How does the body look when diving through space? What are the designs the body makes Can we consciously make designs that will have specific movement qualities and thus be communicative?

FORCE - Is the same amount of tension always needed to give a movement communicative value? Does the reason for the movement determine the force?

For the student to prove his ability to talk about movement sensations he will be required to keep a kinesthetic diary. Each day he is in class or anytime he senses a new movement awareness, he will write about it. It should be a detailed analysis of movements experienced for the first time. Notation of explorations can also be kept to make the diary a resourceful project as well. It will probably be evident to the instructor the progress the student is making kinesthetically by the decsriptions in this diary. Daily notations are vital for the diary to be a successful project.

PERFORMANCE CRITERIA

Part I. STATIC VISUAL PATTERNS

Light: essential to understanding painting or any 2-D Visual Art Form.

A. Increasing visual experiences in light: this area of study will develop awareness of the various individual visual characteristics of light.

1. Light Source: things we see are either lighted by a direct light source or by reflected light. The two major areas of direct light and artificial light. The major natural light source is the sun; others are fire, stars, lightning, etc. Artificial light include all man made light such as electric light, etc. Most artificial and natural light and all sunlight come from sources located above objects. Occasionally an object can be lighted from underneath or from behind. Back lighting occurs when an object completely obscures the light source, which is behind the object and only a glow of light surrounds the object.

A. Performance criteria: Light source.

Aim. Become sensitive to the visual effect when an object is illuminated from different angles.

Criterion. With a light source in hand the candidate must demonstrate to the instructor's satisfaction that he understands where the light source must be placed in order to produce three distinct visual effects when a rectilinear object is illuminated.

Alternate Instructional Methods

1. Lecture-demonstration. With a light source in hand the instructor, using a piece of sculpture, shows the effect light has upon our apprehension of sculptural form.
2. Cut from photo material, using magazines such as LIFE, examples of objects illuminated from three major angles. Mount these, with verbal notation and graphic diagrams, for permanent record in a sketch book.

B. Performance criteria: Light source

Aim. Enable the candidate to become familiar with the visual effects that occur when a situation with more than one object is illuminated from a single source.

Criterion. With a light source in hand the candidate must demonstrate to the instructor's satisfaction, where the light source must be placed while illuminating two objects simultaneously, so that one object will be seen as being illuminated from the front and the other object will be seen as being illuminated from the back.

Alternate Instructional Methods

1. Lecture-demonstration. Using slides the instructor shows how artists have used multiple lighting effects in painting, pointing out the influence these effects have upon the particular spatial quality or mood of the painting.

2. The candidate selects and mounts for permanent record in a sketch book, photographs which demonstrate situations in which more than one object is illuminated simultaneously from the same light source.

   The study of light source is important to the understanding of painting and drawing. The artist, in drawing an object which is to appear three dimensional, uses direction of light to show the light side of a protruding object and the dark side. Maintaining a constant direction of light is essential in developing a relationship of surface changes which describe the object. Most artists use light sources which are slightly above and to one side of the object, however, for dramatic effect under lighting from underneath and back lighting are occasionally used. With sunlight there is, of course, always only one light source, however, with artificial light, there can be many.

3. Direction and angle of light. Light travels in a straight line. When an object impedes its path, the light bounces off the surface in the opposite direction but at the same angle that it hit the object. The other side of the object will not receive any light and the object according to its shape will block out an area of light on the surface which it is resting on. This is the cast shadow. Objects not only receive reflected light from other objects. Light can be reflected from object to object until it is no longer visible. The side of an object receiving direct light will be the lightest; other sides receiving less direct light will be the darkest. The cast shadow is darkest nearer the object but as more reflected light is able to get to it, the lighter it gets until sometimes the end of it may not be visible.

   All of these visual clues are used by artists to describe objects, the surface that they are on, and the amount and type of light being used.

A. Performance criteria: Direction and angle of light.

Aim. Develop candidate's ability to perform manipulative skills relative to the illumination of objects.

Criterion. Given black, gray and white paper the candidate must demonstrate to the satisfaction of the instructor his ability to distribute these three colors in such a way that an illusion of a rectilinear object is produced. This should be done three times. Each example shows the object illuminated from a different angle.

Alternate Instructional Methods

1. Lecture-demonstration. Using film strips or motion picture films which demonstrate light effects.

2. Lecture-demonstration. Using diagrams of his own design the instructor shows how the distribution of black, gray and white that produces the illusion of a rectilinear form is just one member of a broad matrix of possible distribution patterns. In short, demonstrate how other distribution patterns produce different visual effects.

B. Performance criteria: Direction and angle of light.

Aim. Develop candidate's ability to perform manipulative skills which incorporate motor control. Relative to the illumination of objects.

Criterion. Using charcoal, the candidate must draw, to the satisfaction of the instructor, an illusion of a curvilinear object three times, each time the object will appear illuminated from a different angle.

Alternate Instructional Methods

1. Lecture demonstration. Using slides of paintings the instructor shows how artists through history have dealt with the problem of rendering curvilinear forms.

2. The candidate selects illustrations of works of art from five different cultures. He must then describe verbally how curvilinear forms were treated in these various styles.

Part II. Relationships between individual experiences in light: light systems which describe and organize matter (objects and space).

A. Void space: does not reflect any light at all. Light passes through it without change of angle only when space contains particles of something does it appear to reflect light, fog, rainbow, etc. This becomes a visual field in which objects exist.

B. Objects: all reflect light; they can fill up space and they can be filled by space. The light which describes the object also describes the space around or in it.

1. Surface: if a surface is very smooth, it will tend to reflect light in the way it receives it. A surface appears shiny when it is smooth and reflecting light in an even patterns; it is mirror-like when it is so even that it reflects light in exact order that it receives it. When surface is rough, it breaks up the pattern of reflection and sends light in many directions. When surface has a texture, each protrusion acts as a small volume and will have a light and dark side and a cast shadow.

2. Volume: the place where light hits object most directly is the lightest. The value gets gradually darker as the surface moves away from the light source. If there is an abrupt change in the surface, a corresponding change will occur in the value. If an object has an angular surface, the value changes will be very precise and will form an edge between a lighter and darker value. On a curved surface, the light will darken gradually but will darken less gradually than a flat surface. The object will reach its darkest point exactly opposite the light source and will follow the contour of the surface that the object is sitting on. If there is no surface near the object, there will be no cast shadow. The lightness of the surface depends on how bright and close the light source is.

3. Object to object relationship: all objects within the area of one light source will have this lightest side on same side and will cast shadows in the same direction. Objects will reflect light onto each other creating added light sources. If there is more than one direct light source, then the object may have more than one light side and will reflect more light on other objects. If the object is surrounded by a very light surface (white walled room), the whole object will appear lighter. Same object surrounded by dark surface but with strong light source would have very light side and a very dark side.

4. Spatial relationships of objects: things closer tend to be brighter in color, have sharper light and dark contrast. Things further away get grayer (lose their bright color) and contrasts blur together. In expansive distance (landscape) things in deep space tend to be cooler.

5. Local color of objects - The color an object has depends on wave lengths of light that are absorbed by the pigmentation of the surface. The light that is reflected from surface of the object determines what we call the color of the object.

   The purest form of that color (or the color which we tend to generalize over the whole object) falls between the lightest area and the darkest. A royal blue ball may be a very light blue on one side and vary dark on another but the middle grade gives us the local color of the object. If there is a warm light source, the lighted surface of the object will be influenced toward a warmer shade of its color and its darker side will be correspondingly cool. The opposite occurs with a cool light source.

   This color that we generalize as being the local color of an object tends to remain constant and independent of changes in its environments of illumination. It is this color constance, for instance, that allows us to realize that the ball is the same blue whether we see it in very dim light or very bright light.

6. Shape of objects - We also perform a similar generalization concerning the shape of objects. For instance, we tend to see the shape of an opening and closing door as remaining rectangular rather than as a transformation of a trapezoidal like figure. These constant aspects of vision such as color and shape, can be considered invariants of perception. And the artist must become aware of them whether he intends to depict them directly as the craftsmen of ancient Egypt did whether he intends to produce the illusion of them as Western artists since the Rennaisance have done.

A. Performance criteria: Void space

Aim. Enable the candidate to understand the concept of visual space.

Criterion. With paper, pen and ink, the candidate must render using small points of ink, a completely homogeneous field of points. The candidate accomplishes this when he is able to demonstrate to the satisfaction of a majority of the class that the "visual space" of this drawing is the same as that of the original white void of the paper.

Alternate Instructional Routes

1. Lecture-demonstration. Using slides the instructor demonstrates the role played by the concept of the visual field in Impressionist and 20th century painting. He should

also point out the ramifications that this concept has when used as a diagnostic tool in the analysis of paintings of other cultures.

2. Each individual with material of his own choosing, should experiment with different methods by which a homogeneous visual field can be represented.

A. Performance criteria: Surface

Aim. Enable the candidate to become familiar with those visual clues that correspond to our impression of a continuous surface.

Criterion. The candidate must collect and assemble on a single surface, in an order that ranges from fine to coarse, twenty-five different textures. Then using graphic media the candidate must render as a light and dark pattern the visual texture of five actual textures. Success to be judged by the instructor.

Alternate Instructional Routes

1. Lecture-demonstration. Using diagrams of his own design the instructor will point out specific visual clues that lead to an impression of a continuous surface. With slides he will show how artists have used these clues in the past.
2. The candidate makes rubbings of a variety of textures with a variety of materials. These will be placed for permanent record in a sketch book.

B. Performance criteria: Surface

Aim. Develop candidate's ability to perform skill relative to the perception of surfaces.

Criterion. Using black paper and a white ground the candidate must develop to the satisfaction of the instructor, an illusion of a continuous surface that incorporates a gradual change in the size of basic elements.

Alternate Instructional Routes

1. The candidate draws this illusion using a graphic material.
2. The candidate selects photographic material from magazines such as LIFE, examples of surfaces whose spatial condition is dependent upon gradual change in size of a simple structural system.

C. Performance criteria: Surface

Aim. Enable the candidate to realize the three-dimensional form qualities of a continuously changing surface structure.

Criterion. Using a basic three-dimensional building element the candidate must develop a gradual transition between three distinct tactile sensations, such as sharp, rough, smooth. This should be done to the satisfaction of a majority of the class.

Alternate Instructional Methods

1. Lecture-demonstration. Using slides the instructor shows how sculptors have used varying surface qualities to achieve a sense of space and depth in relief sculpture through history.

2. The candidate selects and mounts with verbal description in a sketch book photographs which are visual examples of different textures.

A. Performance criterion: Volume

Aim. Enable the candidate to become familiar with the visual clues that produce the specific spatial relations that we respond to as being volumetric.

Criterion. Using a gradual series of value changes the candidate must describe, to the satisfaction of the instructor, with graphic media, a continuous undulating three-dimensional surface.

Alternate Instructional Methods

1. Lecture-demonstration. Using slides the instructor demonstrates the methods that artists have used in order to create the illusion of volume on a two-dimensional surface. As part of this lecture, the instructor should point out how it is not necessary to use specific light sources in order to develop two-dimensionally, a sense of volume. For example, contour drawing.

2. The candidate selects and mounts with verbal notation for permenent record in a sketch book, reproductions which represent, different modes of two dimensional means of rendering volume.

B. Performance criteria: Volume

Aim. Enable the candidate to become aware of how our tactile experience of form influences our visual apprehension of objects.

Criterion. Using a block of plaster the candidate carves with a chisel or knife a curvilinear form. The candidate will then smooth the surface with a plaster rasp and sandpaper so that there is a smooth continuous transition from concave to convex surface. This should be done to the satisfaction of the instructor.

Alternate Instructional Methods

1. Lecture-demonstration. Using shoes instructor shows different modes of developing sculptural form and the role tactile experience plays in this form.

2. The candidate selects and mounts a sketch book, reproductions of sculpture which represent various qualities of sculpture form.

Part III. COLOR

Color: is a very complex quality and can be considered from many vantage points. It can be considered as a physical phenomena, as the result of a chemical structure, from a physiological - psychological point of view, or from an esthetic point. Most observers will agree that a kind of pleasure may be derived from certain color relations and structures.

When considered aesthetically, color is viewed as a basic element of visual expression and of the visual world and is considered independent of material and objects. It is in this respect that the artist looks at color.

1. Color Production: In general color is produced when light is intercepted by material. We specify the visual quality of a material with words such as opaque, translucent, etc. The color which is produced when material intercepts light is dependent upon the reflective properties of the material and the wave length of the light striking the material. For example, if a piece of deep red glass intercepts a beam of white light only red light will pass through. However, if the same piece of red glass intercepts a beam of green light it will absorb that wave length of light and not allow any light to pass.

   For the artist the most important means of color production is through the physical mixture of prepared pigments and through the optical mixture of small points of color. The former is called subtractive mixture and the latter, since the color produced is similar to the color produced when color light is mixed, is called additive mixture. It is, therefore, important to know the qualities of both colored light and pigmentation in order to be able to manipulate them.

The primary color tones are those which cannot be made by mixing other colors and which in turn can, in theory, mix together to produce all other colors. In subtractive mixing they are red (magenta), yellow and cyan (blue) in additive mixture they are red (orange), green, blue (violet). When these colors are mixed with each other in equal parts three more colors are formed. These are called the secondary colors. The secondary colors of subtractive mixing are the primary colors of additive mixing and the reverse is also true. For example, when red (orange) light from one source is mixed on a surface with green light from another source the resultant color is yellow. This yellow is the secondary color of an additive mixture or the primary color for subtractive mixing.

Complimentary hues are those two which when mixed together in equal parts do not produce another hue but produce a neutral tone. In pigment, they produce a brown-gray, in light, a gray. Complimentary hues in pigment are red and green, blue and orange, and yellow and purple. In light they are blue and yellow, red and green, and purple. When all hues are mixed together in equal parts, they produce a gray-black in pigment and a white in light.

An understanding of color mixing is necessary in order to achieve effects of illuminatin and space in painting. Artists not only rely on mixing pigments and then painting them on a surface, but they also rely on how the eye receives and mixes the light from pigmented spots in the painting to produce a color tone. This latter effect was exploited extensively in impressionist painting.

A. Performance criteria: Additive color mixture, light.

Aim. Enable candidate to become sensitive to the visual effects of additive color mixture of light.

Criterion. Using two spot lights, each a primary color of additive mixture, illuminate from two different angles simultaneously a rectalinear object which is placed a short distance in front of a white screen.

a) The candidate should diagram graphically and account for, to the satisfaction of the instructor, the color of the object and the color of the shadows projected on the screen.
b) Perform the same exercise using three spot lights and two objects placed so that their projected shadows interject.

Alternate Instructional Methods

1. Lecture-demonstration. Using color spot lights the instructor demonstrates additive color mixture. With dimming switches added to the lights, the instructor correlates adjustment of these three dimmers to produce a situation wherein the physical properties of three objects are described most clearly. The class will participate in this demonstration by directing the adjustment of the light level and the placement of the lights.

2. The candidate selects and mounts in a sketch book photographic examples of objects wherin additive color mixtures are apparent.

B. Performance criterion: Additive color mixture, pigment

Aim. Enable the candidate to become familiar with the visual effects of additive mixtures with pigment.

Criterion. through the juxtaposition of small points of pigmentation, produce the effect of one color when viewed from a short distance. The majoriety of the class should be able to tell what the color is.

Alternate Instructional Methods

1. Lecture-demonstration. With the use of slides the instructor shows how artists have used this effect in painting.

2. The candidate selects and mounts in a sketch book photographic examples of how additive mixture effects occur in nature.

C. Performance criteria: Subtractive Mixture

Aim. Enable the candidate to become familiar with the color effects produced when pigments are mixed.

Criterion. Using two primary pigments produce, to the satisfaction of the instructor, a gradation of equal steps.

Alternate Instructional Methods

1. Lecture-demonstration. Using light and colored gelatins, the instructor demonstrated subtractive mixing with light.

2. The candidate demonstrates in his sketch book, with verbal, notation examples of subtractive mixture with pigment.

2. Basic characteristics of color: Any color tone can be distinguished by four basic characteristics:

   a) Hue - Hue is the characteristic which gives color its quality, that is, redness, greeness, etc. The basic hues are yellow, orange, red, magenta, violet, blue (ultramarine), blue (cyran), green, and yellow green.
   b) Light Intensity - Light intensity is the characteristic which determines how light or dark a given color is. This has traditionally been called the value of a color.
   c) Saturation - Saturation refers to the visual impression of purity of hue in any given tone. Any color through mixture may be considered to be diluted by another color. By analogy we may think of a color tone we would a chemical solution, that is, as a degree of saturation.
   d) Color Temperature - Color temperature refers to the characteristic that corresponds to the major wave length of light being reflected from any color area. In general the shorter wave lengths are considered cool and the longer wave lengths, warm.

   It is important to understand these four basic characteristics of color for it is through the manipulation of these characteristics that the artist develops color relationships, i.e. maintains control of the similarities and contrasts between color areas, for purposes of representation, mood, or merely for the sake of their own stimulation.

D. Performance Criteria: Basic characteristics of color

Aim. Enable the candidate to visualize the affect upon the appearance of a color when one or more of the four basic characteristics is altered.

Criterion. Using color paper, and without labeling, the candidate must make a visual representation of the four basic characteristics of color so that they can be readily recognized by 75% of the class.

Alternate Instructional Methods

1. Lecture-demonstration. Using a large array of colors the instructor lays them out randomly on a large table; members of the class are then requested to choose pairs of colors that are equal in light intensity.

2. The candidate selects and mounts in his sketch book pairs of colors which are examples of different types of color contrasts, at the same time noting those basic character-

istics which contribute to similarities and contrasts between the two colors of each pair.

3. Color Induction: Up to this point we have discussed colors as if they could be seen as entites independent of one another. We have adopted this approach to enable us to clarify our description of color. However, since a homogeneous field of color is very rarely seen, to become proficient in the use of color the teacher trainee must become aware of the interactions between colors. The appearance of given color area is dependent upon the color characteristics of its environment. In short, color appearance is relative to its environment. This phenomena is called color induction.

   There are two factors which contribute to color induction: one, the affect that the after-image of the dominant color has upon the sub-ordinate color; and two, the quantity of the dominant color in any situation.

   a) After-image - The after-image of color is a physiological effect and is experienced as a retinal image remaining when we close our eyes after looking for a short period at a color. It is characterized as being an opposite, in all respects, of the original color situation.

      For example, if the color situation we look at is an area of red in a white field the after-image will be a pale green in a darker field. On the other hand, if the original red area was in a black field the after-image will be experienced as a greenish shade in a light field.

      If we go one step further and look at another color while the after-image is still present on the retina of our eye we notice that the color of the after-image mixes with the color that we are looking at.

      An understanding of this process is important not only to facilitate predictions as to how colors will appear when placed next to one another but also to encourage and understanding of how our own internal physiological - psychological processes exercise a direct influence upon what we see.

   b) Color quantity - The quantity of a color can be considered in two ways - one, in terms of relative area of color, and two, in terms of saturation or to what dedegree of purity a color may be. It is on the basis of these two components of color quantity that we establish a parameter by which we determine the dominant color in any situation.

In general the larger the relative area of color the more that color tends to maintain its own identity. Many of us have had the experience of choosing, at the paint store, what we thought to be a very pale color tone only to find after painting the four walls of a room with it that it was much more saturated than our original estimate.

By the same token the greater the purity of a color the more it will tend to remain the same and resist alteration.

Color Quantity also is an important factor in producing spatial effects. This is due in part to the fact that in altering the relative size of color areas we introduce another visual clue that in general indicate spatial differentiation, that is, larger bodies tend to be seen nearer than smaller ones. Also, figures that are nearest tend to be observed as being purer in color when seen relative to distant ones. These are important facts to consider because in altering a color quantity we also tend to alter the depth in formation contained in that color arrangement.

E. Performance criteria: Color induction

Aim. Enable the candidate to become familiar with the changes in appearance a color undergoes when placed in different color environments.

Criterion. Using an orderly array of colored papers the candidate must find a color so that when it is placed on different color fields the appearance of that color will be altered to such an extent that there is no indication at all as to what the original color was. The candidate should do this to the satisfaction of the instructor and 75% of the class in two ways; one, a change in appearance that is primarily a light-dark alteration and two, a change in appearance that is both an alteration of hue, and light-dark. This amounts to making three colors look like four colors.

The candidate must also make two different colors appear the same. This amounts to making four colors look like three.

Alternate Instructional Methods

1. Lecture-demonstration. Using slides the instructor shows how the phonomena of color induction influences how we see works of art and how it functions in daily experience.

2. The candidate selects and mounts with diagrams in a sketch book photographic examples of color induction.

F. Performance criteria: After-image

Aim. Enable the candidate to become sensitive to his own physiological - psychological processes and the role they play in vision.

Criterion. The candidate must stare for about twenty seconds at a saturated red area of color one inch square that has been placed in a white field. He must then shift his gaze to a clear white field and note the quality of the after-image relative to the original. He should do this many times using a variety of colors and arrangements for viewing and for projection. Each time the candidate must record his experience. At the end of the experiment the candidate should be able to detect a general pattern of effects so that he will be able to predict what effect will occur at least 50% of the time.

G. Performance criteria: Color quantity

Aim. Enable the candidate to become sensitive to the different spatial effects as the result of altering color quantities.

Criterion. From an array of colored papers, after selecting a ground color, the candidate must use two figures similar in shape but each a different color. By altering the size of the figures he must produce an arrangement wherein the quantity in area of one color will balance the quantity in terms of saturation of the other area in such a way that each area will be seen as equi-distant from the ground color, as judged by the instructor and 75% of the class.

Alternate Methods of Instruction

1. Lecture-demonstration. Using demonstrations of his own design the instructor shows the affect that changing color quantities has upon the spatial effect of a visual situation.

2. The candidate selects and mounts in his sketch book reproductions of paintings with verbal description. He notes how the various color quantities in each work affect the spatial appearance of that work. He should choose examples of at least three different spatial effects.

H. Performance criteria: Color quantity

Aim. Enable the candidate to become familiar with the effects that varying color quantities have in three-dimensions.

Criterion. Using a large number of small wood blocks the candidate paints five surfaces of each block using five different colors. He then applies these blocks to the five surfaces of a larger block. The candidate must, to the satisfaction of the instructor, arrange the color position of each individual block so that the color of the total matrix will alter as the matrix is viewed from different angles (This is an example of phenomena called irridesence).

Alternate Instructional Methods

1. Lecture-demonstration. Using slides the instructor shows historical examples of polychrome sculpture.

2. The candidate selects and mounts in a sketch book photographic or actual examples of irridescence. He should also describe verbally the changes in the various color relations.

Part IV. DYNAMIC VISUAL RELATIONS

A. Performance criteria: Dynamic visual relations

Aim. To enable the candidate to become familiar with the structure of dynamic visual patterns.

Criterion. Starting in one corner of the light display, with two lights in operation, the candidate must generate a pattern to the satisfaction of the class, wherein one light is chasing the other around the display.

Alternate Instructional Methods

1. Through the use of graphic signs and a sequence of formats, the candidate indicates the interstructure of the visual pattern, chase.

2. Through the use of a standardized notational scheme, the candidate composes the visual pattern, chase.

B. Performance criteria: Dynamic Visual relations

Aim. Enable the candidate to become aware of the relation between the formal structure of the visual pattern "chase", and an actual chase.

Criterion. Using a movie camera, the candidate documents the actions of two participants in such a way that, after editing, the sequence of action will be observed by the class as being a chase.

Alternate Methods of Instruction

1. Lecture-demonstration. With the use of films the instructor shows how different methods have been used to create the illusion of a chase.

2. The candidate demonstrates the pattern of a chase with live performers, augmented by word description.

C. Specific Performance Criteria

1. To know and be able to execute basic locomotor and movement patterns such as walk, run, leap, hop, jump, push, pull, twist, turn, swing, sway, shake, bounce, stretch, collapse, rise, fall, etc.

2. To understand the basic laws of balance, inertia, leverage, centrifigal force, centrigugal force, and to perform movements which incorporate them. Simple example of performance tests:

   a) Balance - standing on one leg, flex the knee and drop body weight down into the foot. Repeat flexing, but with the feeling of lowering the center of gravity. When one has the image of bending the knee the weight drops causing incorrect alignment of the leg and thus a loss of balance. When one lowers alignment is correct and thus the center of gravity is over the base of support insuring balance.
   b) Inertia - An object in motion tends to stay in motion until acted upon by an outside force. During the run, the center of gravity is beyond the base of support, causing the body to fall forward, a step is taken insuring balance for that moment--until the center of gravity is taken under control and centered, the individual will continue to run--or fall.
   c) Leverage - Through various movements see the principles of 1) the longer the lever the more force, 2) the shorter the lever the more control. The closer to the center that the movement begins, the more fluid the movement and the more control over the movement.
   d) Centrifigal Force - While turning with the arms in close to the side, and then extending the arms wide once maximum speed has been reached, the body will tend to slow.
   e) Centripetal Force - Moving in a circle with slow walks and the body curved in toward the center, the walking pace is increased until they are running, and the body can feel the pull of the force on it.

3. To be able to read movement kinesthetically. The student should be able to identify movement and then perform it. He should also be able to improve his own movement patterns by mentally practicing the movement. If he truly can sense the movement he can improve his performance ability by going through it mentally.

4. To know the elements of composition found in the arts such as line, symmetry, and variation of a theme and to be able to show examples of them through a movement study.

5. To understand rhythm and the time elements involved in movement. All movement has a rhythm and it is through our inability to sense the span of time that movement takes that causes one to feel arhythmical. Sufficient experiences in sensing the duration of time should erase this weakness. This rhythmic time awareness must be demonstrated through a study whose prime element is its rhythmic structure.

6. To possess control in ones own ability to move well regardless of basic limitations. To possess confidence. The mind governs the body and often the lack of confidence hinders a persons ability to perform well. Once this is overcome limitless progress can be made. If a student thinks of starting a movement in the proper place, the mind will govern the execution and the movement will have the proper control. If a student thinks positively while balancing, he will succeed--only when he doubts does he fail.

7. The ability to direct students in a variety of movement experiences in an atmosphere conducive to creativity. They can judge the success of their directions by the students response to their images. The explanation must be specific without being limiting so that the student can show and develop their own creativity.

8. The ability to perform movements created by others. If someone demonstrates they should be able to perform it--this is directly related to their kinesthetic awareness.

9. The ability to create and perform a dance study with music suitable to the dance.

10. The ability to analyze dance structure and offer suitable criticism.

The following outline of performance criteria is fairly obvious. The traditional trichotomy of music, melody, harmony and rhythm has been rejected, and instead the evident and "visible" parameters of:

1. Pitch

2. Timbre

3. Dynamics

4. Rhythm (duration)

5. Simultaneity

have been chosen. Within each parameter a simple problem to be solved by the candidate which willillustrate an awareness of "musical" sound will be crested on a perceptual and conceptual basis. Each task is arbitrarily selected and it would be an effortless matter to substitute an effective alternative. Each task being simple can through an increase of subtlety or difficulty or with an intensification of information density be transformed into a highly complex task, yet with the same ends, i. e. of catering to conceptual and perceptual needs. The difference being of course that the complex task is one the hierarchical spiral better fitted to the uses of the specialist.

It is believed, too, that an effort should be made to expose the candidate to musical instruments, traditional and also experimental where possible. In the early years much use can be made of self created sound instruments, perhaps in conjunction with artifact training.

At the end of the work with the separate parameters, it ought to be possible for the candidate to construct a very simple music system out of:

1. The pitch concepts of high, identity, low

2. Timbral concepts of sames or differences

3. Dynamic concepts of loud and soft

4. Rhythmic concepts of long and short or durational differences

5. Simultaneity concepts either controlled or randomly selected.

With this material the candidate improvises or composes. If notation is necessary the candidate can devise his own. Perhaps it would be best to transmute the composition to the players completely aurally.

A. Performance criteria: Music

Skill. Pitch discrimination in terms of two sounds. Which is 'higher' and which is 'lower'? Also the relation of pitch to frequency of vibration.

Aim. Demonstrate the ability to discriminate pitches.

Criterion. A tape machine will play a pitch followed after a short pause by another pitch. Candidate must correctly name that which is higher and that which is lower or be able to call them identical if that be the case. This test ought to be done about 8 times, with varying sized intervals used.

Evaluation. Candidate ought to be able to correctly identify at least 7 correctly and all 8 if there are no uses of microtones.

Alternate Instructional Routes

1. Substitute the piano or other available instrument capable of playing single tones.
2. Demonstrate with trombone slide that as the tubing is increased, pitch fall lower...moving toward a correlation between small and high and large and low.
3. Construct a monochord (a single string stretched over a box. Demonstrate the effects of stopping string at various modes as compared to its full length.

   a) This test is best conducted in the midst of an audience, so that the group is in a position to corroborate the findings or correct them. It is instructive to analyze when possible any 'mistake' so that it can be seen as either conceptual or perceptual. Trainees should be encouraged to discuss the effect of being tested on the ability to perceive. Too,it would be of value to discuss whether the effort to discriminate high from low was inhibiting to the process of relating the tones into some expressive relation. A line of discussion based on this very small and simple test can on a hierarchical spiral, stimulate the trainee to see vital and germane dichotimies of thought in relation of sound and music.

   It is obvious that this test can be expanded to include more than pitches, and can be transferred to the other parameters such as timbre, rhythym, dynamics, etc. and can be used in combination.

B. Performance criteria: Music

Skill. Timbral discrimination.

Aim. Demonstrate the ability to differentiate between timbres.

Criterion. A tape machine will play at various pitch levels (at least 5 different ones) notes produced by different sound sources. The candidate must differentiate between A sound source and the B.

Evaluation. Candidate ought to be able to perform test perfectly with training.

Alternate Instructional Routes

1. Compare sine tone frequency of 440 cps to oboe and trumpet Discuss in terms of expressiveness the differences.

2. On some note common to male and female voices (adult) compare differences of quality. Can one tell the difference between sexes if not looking at the sound source?

3. Using acoustical instruments and oscilloscopes, compare the differences between sounds of the same pitch.

    a) As in the discussion of pitch discrimination it is of value to discuss the conceptual and perceptual modes in regard to timbral qualities. In terms of philosophy and/or psycho-acoustics, why not talk about ethos and its implications.

C. Performance criteria: Music

Skill. Dynamic discrimination in terms of steady state qualities and volume increase and decrease.

Aim. To demonstrate the ability to distinguish between relative qualities of loudness and softness.

Criterion. A tape machine will play a pitch at a given loudness. It will then play the same pitch at a relatively louder level, or softer or the same. The pitch can also gradually increase in intensity or diminish. The candidate should be asked to do about 10 examples.

Evaluation. If the candidate after some practice is able to score 9 out of 10, the test will have served its purpose.

Alternate Instructional Routes

1. With the human voice demonstrate the stages between whispering and roaring. Show how one can gradually transfer a whisper to a roar or vice-versa.

2. With the use of tape recording facilities show the affect on the VU meter of difference in dynamics.

3. Demonstrate the difference in quality of the same song performed in various and arbitrary dynamic manners.

   a) The candidates ought to discuss the expressive, and psychological effects of dynamics as well as the physical. It is important to examine the extremes of inaudibility and overpowering levels leading to physical injury.

   b) In line with the apparent and real physical consequences of sound, perhaps it would be good for the candidates to discuss body responses in general to sound phenomena.

D. Performance criteria: Music

Skill. Rhythmic discrimination

Aim. To demonstrate the ability to react to and recreate rhythmic figure.

Criterion. A tape machine will play a series of 10 rhythmic figurations. After each figuration, the candidate will be asked to perform the figuration. Candidate ought to be able to recreate the figurations after some practice in 9 out of 10.

Evaluation. 9 out of 10 would indicate sensitivity to rhythmic figuration.

Alternate Instructional Routes

1. A tape machine plays a rhythmic figuration. It then plays a figuration which is either the same or different. Candidate must discriminate.

2. With graph paper the candidate shows the applicability of proportion to duration, and how series of durations can add up to a rhythmic figuration.

   a) The problem of rhythm is certainly the most basic and the most critical to deal with an conceptual terms. It is important of course to develop the rhythmic sense apart from the inhibiting factors of 'rationalization'. Of course one would too want to talk about duration, proportion, tempo, meter, physical pulls, continuities etc. all of which enter into consideration. After thinking about the means of teaching rhythm I have concluded that to be consistent the tests ought to be somewhat similar to the other parameters discussed, but that in practice, an aural reactive physical approach to rhythm will be more realis-

It is even to be suggested that rhythmic difficulties which are discovered in child (or adult for that matter) may be indicative of psycho-motor impairment restructuring of the rhythmic posture and attitude.

I think in the teacher training situation it would be most helpful for the candidates to frankly discuss their attitudes toward rhythmic recreation. Also the difference between the mechanical rhythmic recreation and the performance which seems to have 'flow'.

E. Performance criteria: Music

Skill. Pitch discrimination in terms of simultaneous sound

Aim. To understand an important element of 'harmony' and 'counterpoint'.

Criterion. The tape machine will play a series of musical intervals from the prime to the major ninth, but in no planned order. The candidate will be expected to name the intervals.

Evaluation. After minimal training a perfect score can be expected.

Alternate Instructional Routes

1. Simple and well known songs can be utilized to understand their intervallic structure, both melodically and harmonically.

2. Acoustical ratios can be demonstrated on a monochord-how these represent different sounds and intervals.

3. The overtone series can be explained and one can be derived in order to illustrate interval structure, etc.

    a) It is important to illustrate to the candidates and for them in turn to discuss the ramifications of simultaneities, both in the context of common practice harmony and in the context of polyphony and heterophony.

SOCIAL STUDIES APPENDIX

SOCIAL STUDIES -- EXAMPLES OF PERFORMANCE CRITERIA

The following performance criteria have been grouped according to the four areas described in the social studies section. With the aid of Bloom's Taxonomy of Education Objectives, the criteria have been arranged within each of these areas into a "generalist-specialist" hierarchy. The "generalist" teacher who seeks to achieve equal competence within a number of disciplines -- science, mathematics, language arts, as examples, -- as well as social studies, would not be required to be an expert in any single field. The "specialist," however, who has chosen social studies teaching as his area of expertise must demonstrate an extremely high level of competence in it, and consequently, he is expected to satisfy criteria which go well beyond our expectations of the generalist.

All of the criteria are classified within the cognitive domain (Bloom classification levels appear in parentheses beside each criteria) with the exception of Area 4 criteria which are also classified within the affective domain.

Area 1: Organization of Knowledge

Included among the instructions to the Prospective Teacher for this section will be a list of fifty topics -- all major concerns from within the social studies as found in both elementary and college textbooks. It is from this list that topics for analysis will be chosen by the evaluators, and therefore the candidate will be expected to prepare himself to satisfy the performance criteria of this section using any of the given topics.

Generalist

Criterion 1: The Prospective Teacher will define all major concepts found in the model that he has chosen to use both: (a) literally (1.00); (b) with examples (2.00).

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives:

1. Small seminar with a faculty member and a group of peers in which concepts used in the chosen models can be defined and applied.

2. Self-definition through the use of dictionary and resource materials.

Criterion 2: The Prospective Teacher will explain the way in which the model that he has chosen is used (this step will not be evaluated although explanation must be comprehensible). The Prospective Teacher will provide a rationale for the use of the model which will include an explanation of when and why it is most useful and when it is not applicable. (3.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives:

1. Small Seminar with a faculty member of the School of Education to discuss and evaluate the use of models.
2. A wide variety of social science courses.
3. Written instructions describing the use of models.
4. A programmed booklet of instructions and examples.

Criterion 3: For a given social studies topic chosen at random by the evaluators from the master list, the Prospective Teacher will orally, or in writing, "analyze" (according to the description of Area 1 and the instructional guidelines presented to the candidate) the topic with respect to: (a) a single conceptual area chosen by the candidate; (b) a second conceptual area chosen by the evaluators; e.g., if the Leonard model is used, an area to be chosen might be "Continuity and Change." (4.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 2.

Criterion 4: The Prospective Teacher will apply particular "components" and conceptual areas of the model selected by the evaluators to four other topics chosen at random. (4.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 2.

Criterion 5: The Prospective Teacher will examine, compare, and contrast two similar social phenomena chosen from the list by the evaluators with respect to one conceptual area. (e.g., the Civil War and the Korean War with respect to "institutions"). (4.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 2.

Specialist: The specialist will be expected to perform the preceding criteria both orally and in writing as well as the following:

Criterion 6: The Prospective Teacher will compare two separate models in terms of their applicability, flexibility, and usefulness with respect to three topics chosen randomly from the master list by the evaluators. The Prospective Teacher will consider differences in the use of the models, the effects resulting from their use and the strengths and limitations of each model. (6.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 2.

Area 2: Skills

I. Analysis and Interpretation of:

A. Written Communications

1. Rationale for structure and format

Generalist

Criterion 1: Given a social studies textbook the Prospective Teacher will, in writing, explain the purpose for and distinguish between the following parts: Preface, Introduction, Appendix, Index. (1.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives:

1. A written outline describing how books, magazines, and newspapers are structured with definitions and examples of important terms and "parts" will be provided to each Prospective Teacher.

2. A video taped lesson presenting the same information as above to be viewed at any time by a Prospective Teacher.

3. An evening seminar where the information above would be discussed.

Criterion 2: Given copies of the New York Times and the New York Daily News of the same date, the Prospective Teacher will in writing compare the formats and explain why they differ, taking into consideration the population to which the papers appeal.

Specific areas of concern within the formats would be:
Front page - headlines, type of news article, etc.
Editorial - importance, general tone
Society page
Feature articles
Comics
Pictures
Sports Page
Other

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1.

Specialist

Criterion 3: Given descriptions of two specifically defined "populations," the Prospective Teacher will design a newspaper format for each of these groups, give rationale for his formats, and explain why the two newspapers would differ in structure and presentation of content. Formats would include: Front page - headlines, etc.; Editorial - importance, general tone; Society page; Feature articles; Comics; Pictures; Sports Page; and Other.

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1.

I. Analysis and Interpretation of:

A. Written Communications

2. Identifying Main Ideas

Generalist

Criterion 1: Having read a social studies passage, the Prospective Teacher will answer a series of multiple choice questions. (Questions will be similar to those used on the Educational Testing Service Scholastic Aptitude Tests: Verbal). (2.00)

Evaluation: 60% (Specialist = 80%)

Instructional Alternatives:

1. Courses provided in the English Department.
2. Seminars with a group of peers and an instructor to practice these skills.
3. Provide booklets of varied readings, with guidelines and examples of how to go about finding main ideas, etc. This will allow for individualized instruction.

Criterion 2: Having read three "simple" social studies passages, the Prospective Teacher will list the main ideas that he has found. He will be told in advance the number of main ideas which a group of evaluators have agreed upon. (2.00)

Evaluation: 70% agreement on all three.

Instructional Alternatives: Same as Criterion 1.

Criterion 3: Having read three "more difficult" passages, the Prospective Teacher will follow the procedure of Criterion 2. (2.00)

Evaluation: 70% agreement on at least two of the three passages.

Instructional Alternatives: Same as Criterion 1.

Specialist

Criterion 4: Having read three very difficult passages, the Prospective Teacher will follow the procedure of Criterion 2. (2.00)

Evaluation: 70% agreement on at least two of the three passages.

Instructional Alternatives: Same as Criterion 1.

I. Analysis and Interpretation of:

A. Written Communications

3. Determining Purpose of the Author.

Criterion 1: Given a number of social studies passages, the Prospective Teacher will be able to identify the purposes or intentions by passing a multiple choice test (similar to E.T.S. S.A.T.: Verbal). (4.00)

Evaluation: 75%

Instructional Alternatives:

1. Courses provided in the English Department dealing with interpretation of written communications.
2. Seminar with a group of peers and an instructor to practice this skill.
3. Provide booklets with varied readings, and guidelines and examples of how to identify purposes and intentions of an author.

I. Analysis and Interpretation

A. Written Communication

4. Determining Existing Biases

Generalist and Specialist

Criterion 1: For each of three given social studies passages, the Prospective Teacher will underline the phrase and clauses within the passage which may demonstrate bias on the part of the author. Then given a series of 10 statements which may be plausibly descriptive of the author's bias, the Prospective Teacher will indicate which statements are: (a) proven inference drawn from the passages; (b) not proven inferences drawn from the passages; (c) unable to be judged. (4.00).

Evaluation: 70% overall. (Specialist = 85%)

Instructional Alternatives: Same as I.A.2. - Identifying Main Ideas.

Criterion 2: The Prospective Teacher will be given written instructions in the use of "propaganda analysis." He will then analyze three social studies passages (one of which will be a speech) using the techniques developed. (3.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as I. A. 2. -Identifying Main Ideas.

Criterion 3: Given three social studies passages or statements with a common bias or prejudice found throughout each, the Prospective Teacher will: (1) identify in writing (1 or 2 sentences) what the common bias is; (2) underline phrases and clauses in each passage which support this bias. (4.00) Evaluators will have previously agreed upon articles which represent common bias, what the bias is, and those statements found within which illustrate this bias.

Evaluation: 60% agreement. (Specialist = 80%)

Instructional Alternatives: Same as I. A. 2. -Identifying Main Ideas.

I. Analysis and Interpretation of :

B. Audio and Visual Communications

Generalist: Three types of audio-visual communications will be presented to the Prospective Teacher (e.g., short documentary film, filmstrip, video tape, sound tape, etc.). The teacher will write the following which will have been agreed upon previously by a group of evaluators:

Criterion 1: A list of the main ideas for each. (2.00)

Evaluation: 50% agreement

Instructional Alternatives:

1. Show a series of five minute video tapes demonstrating how various types of communications should be observed in order to determine main ideas, biases, etc. As part of the series, "practice" tapes will be shown which can serve as an indication of potential success

2. Group discussions where audio-visual communications will be presented and discussed. In this way, the Prospective Teacher will be able to see how others analyze these media and also be able to test and practice his own abilities.

Criterion 2: A list of the existing biases for each. (4.00)

Evaluation: 50% agreement

Instructional Alternatives: Same as Criterion 1.

Criterion 3: The basic purposes of each. (4.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1

Criterion 4: The use to which the media would be made. (3.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1

Specialist

Criterion 5: Given four political cartoons, the Prospective Teacher will identify the common theme underlying three of them and explain why the fourth doesn't relate to the others. (2.00)

Evaluation: Discuss with an evaluator who will judge the teacher pass-fail.

Instructional Method: Give Prospective Teachers examples of cartoons and the underlying themes and let them practice on their own.

Criterion 6: Using a "model" chosen previously, the Prospective Teacher will organize knowledge and ideas found within three types of audio-visual communications. (5.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1

I. Analysis and Interpretation of:

C. Maps, Globes, Graphs and Charts

Criterion: The Prospective Teacher will demonstrate his ability to "read," interpret, and locate information on maps, globes, graphs, and charts through a multiple choice test (such as those developed by the Behavioral Research Laboratory) (1.00, 2.00, and 3.00)

Evaluation: 75% (Specialist = 90%)

Instructional Alternatives:

1. Prospective Teachers will be given specific written directions or programmed instruction in these skills.
2. Individual practice of these skills.
3. Short lecture course in these skills.

II. Locating and Using Information from Reference Sources.

Generalist

Criterion 1: The Prospective Teacher will demonstrate an ability to: (1) locate materials in a card catalog; (2) locate materials in periodical listings, film listings, etc.; (3) use indices for books, encyclopedias, etc. Ability will be examined through a multiple-choice test. (3.00)

Evaluation: 80% (Specialist = 90%)

Instructional Alternatives:

1. A lecture given by the school librarian in the use of the library resources materials.
2. A programmed instruction booklet.

Criterion 2: Given a specific research topic, the Prospective Teacher will delineate the steps used in locating resources relevant to the topic. This written delineation will include all headings and subjects looked up in card catalogs, periodical listings, film and filmstrip catalogs, reader's guides, almanacs, encyclopedias, etc. As a final step, a bibliographical listing of all resources found will be presented with the following groupings: almanacs, atlases, books, encyclopedias, films, filmstrips, newspapers, periodicals, other. At least six types of resources must be consulted and 25 bibliographical entries listed. Evaluation will be based upon accuracy of steps used and entries provided. (3.00)

Evaluation: 90%

Instructional Alternatives: Same as Criterion 1

Specialist

Criterion 3: For each of the 25 bibliographical entries listed above, the Prospective Teacher will give a short rationale for his choice of material. The purpose of this task is to determine why and how the teacher uses various resources. (6.00)

Evaluation: A "pass" grade as judged by an evaluator.

Instructional Alternatives:

1. Seminar in the use and selection of resource materials.
2. Video-taped instruction in the process of selection of resource materials.

III. Recognizing and Analyzing Social Science Problems

Generalist

Criterion 1: Having read two brief passages (or statements) representing conflicting points of view, the Prospective Teacher will be given a list of 10 statements, each of which is to be identified as one of the following: (1) supports passage 1; (2) supports passage 2; (3) is a compromise or resolution of the two passages; (4) supports neither passage. (4.00)

Evaluation: 80%

Instructional Alternatives:

1. Prospective teachers will participate in a number of debates.
2. Individual practice and selection of courses within the social sciences which provide opportunities for "rational thinking" of this type.
3. Seminars with peers in which "problem solving" techniques will be discussed and efforts toward resolving conflicts will be made.

Criterion 2: Given a debate topic (Resolved that . . .), the Prospective Teacher will be asked to defend in writing both the affirmative and the negative viewpoints. Arguments on both sides should be listed from strongest to the weakest. (5.00 and 6.00)

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1

Specialist

Criterion 3: Given a written description of a situation in which there is a potential for conflict, the Prospective Teacher will: (1) identify the potential conflict (4.00); (2) identify the causes of the conflict (4.00); (3) describe the possible solutions to the problem, listing the strengths and weaknesses of each (6.00); and (4) select a solution and defend it (5.00).

Evaluation: Satisfaction of two out of three evaluators.

(Criterion 3 can be constructed as a multiple choice examination).

Instructional Alternatives: (Same as Criterion 1)

Area 3: Value Orientations

Generalist

Criterion 1: Given a list of fifty statements containing value orientations, the Prospective Teacher, when he feels prepared, will attend a testing session. At this time, fifteen of the statements will be chosen at random and presented to the Prospective Teacher for him to: (1) recognize what the statement (value) means (1.00); (2) identify a historical event in which it was a major issue (1.00); (3) identify a social science premise upon which it is based (1.00); and (4) provide in five sentences or less a contemporary example involving the value orientation (3.00). Steps 1-3 will be multiple choice selections; each subsection will have equal weight.

Evaluation: 70% proficiency.

Instructional Alternatives:

1. Additional courses in the social sciences with a special awareness of value orientations on the part of the Prospective Teacher.
2. Discussions with peers as to the basis of value orientations and ways in which they can be identified.
3. Practice identification of "values" by viewing a series of video tapes similar to those to be used in Criterion 2.

Specialist

Criterion 2: Given a series of video tapes (5) of people "talking," the Prospective Teacher will identify the value orientations found within each.

Evaluation: Satisfaction of two out of three evaluators.

Instructional Alternatives: Same as Criterion 1

Area 4: Sensitivity and Improvization

Criterion 1: Step 1: The Prospective Teacher will be shown two short documentary films, each describing a specific type of American community (e.g., white middle class, Negro ghetto, Indian reservation). The teacher should recognize these as cultural settings within which children attend school.

The candidate then will determine the accuracy of 60 statements about each film by marking them true or false. "True"statements, representing hard facts and very strong inferences, will comprise about two-thirds of the lists. (This large number of truthful items will provide the substantive data for Step 2.) (Cognitive: 4.00; Affective: 2.00, 4.00)

Evaluation: 90% (Satisfaction of Step 1 is required before proceeding to Step 2.)

Step 2: A list of five social studies topics (e.g., The Pilgrims, Indian America, The Police etc.) with three presentation outlines given for each topic, will be read by the Prospective Teacher. For each topic, one outline will be developed with the Community described in film 1 in mind, a second with community 2 in mind, and a third with another type of community in mind, although the outlines will not be labeled as such for the Prospective Teacher.

Of the 15 outlines given, the teacher will select two presentations as appropriate for students from each of the two communities covered by the films. Selections must be justified by using as "evidence" the true statements of Step 1 which basically summarize community characteristics. Examples will be provided as guidelines to the Prospective Teacher. (Cognitive: 6.00; Affective: 4.00, 3.00)

Evaluation: Satisfaction of two out of three evaluators.

(Note: Although the teacher should realize that specific presentations are appropriate to a certain community, this is not a test to determine whether outline and community are matched up correctly. If this matching does occur, the teacher's task in defending her choice will be much simplified; but it should be emphasized that the rationale and defense of her selection are of prime concern here.)

Example of points to be emphasized in three presentation outlines about:

The Pilgrims

Outline A: (directed toward ghetto children).

1. Persecution of a minority by a majority.
2. Loyalty to the subgroup.
3. The role of sacrifice in society.
4. Short term benefits vs. long term benefits.

Outline B: (directed toward white middle class).

1. Basic founding principles.
2. Thanksgiving as a holiday.
3. Their heritage from the first settlers.
4. Inspiration to American development and greatness.

Outline C: (directed toward American Indian)

1. The American Indian in 1620.
2. The first contact between Indians and white men.
3. The great help given by Indians.
4. Events leading to breakdown of cooperation.

Instructional Alternatives:

1. Individual reading about various cultural areas and their educational needs.
2. Course work -- seminars, etc. -- concerned with making social studies compatible with the needs of the students.
3. Practice teaching in the laboratory school.
4. Practice of performance criteria with sample films and tapes.

Criterion 2: The ability of the Prospective Teacher to improvise within the classroom will be tested by showing him a series of 50 short (5-15 seconds) video tape segments which establish various classroom situations (examples follow). The candidate will be asked to: (1) respond immediately to the situation as he would if teaching. The initial response will not be evaluated; (2) tell how he would incorporate the situation into a meaningful learning experience. (Cognitive: 5.00; Affective: 2.00 to 3.2 and 3.3)

Evaluation: Satisfaction of two out of three evaluators.

Note: The student will be shown several sample tapes and read the responses, good and bad, made by various teachers. Then if so desired, he may try a few practice tapes before attempting to satisfy the criteria.

A residual benefit of this exercise would be in decreasing the trauma which often accompanies the handling of such situations and to turn what are often embarrassing situations from her standpoint (though "exciting" to the students) into valuable learning experiences.

Examples of tapes:

1. In a lesson on Italy, a child asks: "Why do all Italian women have hairy underarms?"
2. A Negro and a white boy begin fighting after the remark, "dumb nigger!" is heard.
3. A teacher kills a bee that is "terrorizing" the class and a student asks, "Why did you kill it -- it wasn't doing anything to you?"

Instructional Alternatives: Same as Criterion 1.

FOREIGN LANGUAGE APPENDIX

COMPETENCE	HIERARCHY -- MINIMAL	GOOD	EXCELLENT	SUPERIOR
Listening	Ability to get what a native speaker says when he is making a special effort to be understood on specific topics.	Ability to understand conversation at normal tempo, lectures, and news broadcasts on specific topics.	Ability to follow closely all types of standard speech such as rapid or group conversation and mechanical transmitted speech on specific topics.	Ability to orally translate simultaneously to English all types of standard speech on specific topics.
Speaking	Ability to speak on specific topics without obvious faltering and with a pronunciation understandable to a native speaker.	Ability to speak with a native with a command of vocabulary and syntax sufficient to express one's thoughts in conversation at normal speed with reasonable good pronunciation on specific topics.	Ability to speak fluently on specific topics approximating native speech in vocabulary, intonation, and pronunciation and exchange ideas and be at ease in social situations with native speakers.	Ability to orally translate simultaneously to English and to the target language a live exchange of ideas between a native speaker of English and one of the target language on specific topics and establish an atmosphere of ease in the situation.
Reading	Ability to read specific topics by answering factual questions about the content.	Ability to read with immediate comprehension prose and verse of average difficulty and mature content on specific topics.	Ability to read almost as easily as in English material of considerable difficulty on specific topics.	Ability to translate (orally or written) to English as he reads material of considerable difficulty on specific topics.
Writing	Ability to write on specific topics given a title, a title sentence, and questions to guide him.	Ability to write a simple "free composition" and a personal letter on specific topics with clarity and correctness in vocabulary, idiom, and syntax.	Ability to write brief reports and a business letter with idiomatic naturalness, ease of expression and some feeling for the style of the language on specific topics.	Ability to write original articles in the target language on specific topics and to publish one article.

COMPETENCE	HIERARCHY -- MINIMAL	GOOD	EXCELLENT	SUPERIOR
Linguistics	An understanding of the differences in the sound systems, forms, and structures of the target language and English.	Knowledge of the development and the present characteristics of the target language.	Knowledge of applied and descriptive linguistics by researching in relation to his target language.	Knowledge of comparative and historical linguistics by researching in relation to his target language.
Culture	An understanding of the principal ways in which that target culture differs (and is unique) from the American culture.	First hand knowledge of some literary masterpieces and acquaintance with the history, geography, art social customs and mores, and contemporary civilization of target country.	An enlightened understanding of the target people and their culture with emphasis on the literature and the arts.	Knowledge of the target people and their culture with emphasis on symbolism, value, authority, order, love, ceremony, honor, humor, beauty, and spirit.
Professionalism	Knowledge of the visual audio-lingual behavioral objectives and methods and techniques for attainment of objectives.	Knowledge of the use of specialized teaching techniques and the relation of language teaching to other areas of the curriculum and evaluate professional literature.	Involvement in teaching, breadth and depth of professional outlook and experimenting with and evaluating new teaching methods and techniques.	Proposal of an ungraded FLES program and a dissertation on the teaching of FLES to be published.

Area: Listening

Skill: The candidate will demonstrate the ability to get the sense of what a native speaker (or speakers) says when he is making a special effort to be understood and when he is speaking on the following topics: (1) greetings, (2) names, (3) friends, (4) family, (5) addresses, (6) time of day, (7) meals, (8) activities, (9) entertainments, (10) dates, (11) holidays, (12) shopping, (13) refreshments, (14) illnesses, (15) accidents, (16) dances, (17) outings, (18) the telephone, (19) get-togethers, (20) vacations, (21) cities, (22) weather, (23) the home, (24) the movies, (25) the restaurant, (26) the cafeteria, (27) towns, (28) meals, (29) tennis, (30) baseball, (31) the band, (32) football, (33) television, (34) news, (35) books, (36) radio, (37) birthdays, (38) weekends, (39) gifts, (40) the common cold, (41) numbers 1-1,000,000, (42) days of the week, (43) months of the year, (44) seasons, (45) ages of persons, (46) parades, (47) picnics, (48) camping, (49) the guitar, (50) records, (51) downtown, (52) music, (53) the dentist, (54) the hospital, (55) an invitation, (56) an excursion, (57) fishing, (58) a lake, (59) swimming, (60) bowling, (61) a reunion, (62) automobiles, (63) driver's license, (64) record player, (65) a trip, (66) summer jobs, (67) capital cities, (68) abroad, (69) table service, (70) addition, (71) subtraction, (72) division, (73) an interview, (74) photography, (75) directions, (76) polite commands, (77) selling, and (78) colors. (These topics are only suggestions, since the topics selected might differ depending on the target language being taught. It is also suggested that additional general and familiar topics be added as the need or interest indicates.)

Hierarchy: Minimal

Criterion: Given five different dialogues of four to ten lines each for each topic between two natives that speak in the target language on tape (audio or video), the candidate will identify each dialogue as he listens to it by recording on tape or in written form in English the essence of what was said in his own words.

Evaluation: The student may listen to each dialogue as many times as he wishes. The English equivalence of each dialogue must never disagree with the original in the target language and they must always match. The candidate will be expected to perform with 100% accuracy and to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these may be selected)

Training Model-A

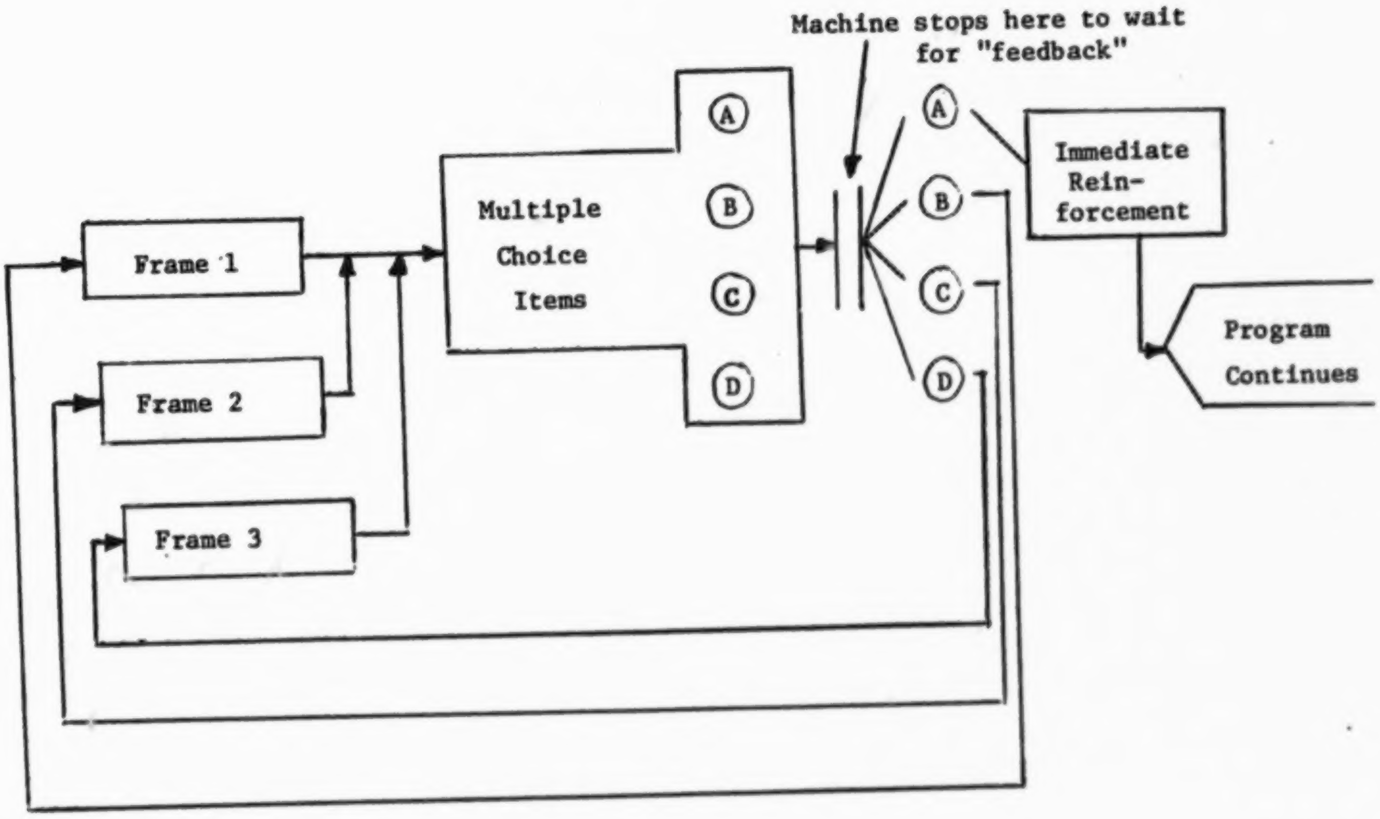
Course work with an emphasis on giving the student a variety of opportunities to demonstrate the minimal (competence of listening in the classroom and) in the language laboratory. The student will demonstrate the ability to listen to and get the sense of what two native speakers say when making a special effort to be understood, given five different dialogues of four to ten lines on each of the topics in the target language. The candidate will be expected to perform with 100% accuracy in identification exercises that will require the student to respond on audio tape (orally) or on paper (written) in English the information requested to identify each topic (this will not take the form of a translation). Answer sheets will be provided to guide the student in the responses, which in some cases will require the student to simply check off the correct response, or circle it. The student will be permitted to listen to each dialogue (live, audio-tape, or video tape) as many times as he deems necessary to identify the topic as requested on the answer sheet.

Training Model-B

Programmed instruction or computer assisted instruction which could give the student practice in the language laboratory, the instructional materials center, making use of audio tapes, video tapes, filmstrips, films, and records. The performance criteria and evaluative process based on it would be the same as that of Training Model-A.

I would like to elaborate here on intrinsic programming of foreign languages as advocated by Dr. Richard Barrutia of the University of California, Irvine, in an article he wrote in The Study of Foreign Languages, edited by Joseph S. Roucek, New York: Philosophical Library, Inc., 1968, pp. 237-251.

The intrinsic approach will require linguistically sound alternative material to be recorded on tape (audio or video) for any given error that might be made as diagrammed below:


Machine stops here to wait for "feedback"
Frame 1
Frame 2
Frame 3
Multiple Choice Items
A
B
C
D
A
B
C
D
Immediate Rein- forcement
Program Continues

The requirements of such a program will be as follows: (1) completely self operational, (2) meet requirements of teaching machine principles (not advance candidate to next level until demonstration of mastery of previous level) and, (3) have self-correcting and adjusting capabilities based on bi-directional feedback.

The candidate in this type of program will always be given alternative choices that are correct in syntax intonation and pronunciation. The candidate could respond verbally and then push the respective respond button. So even if the candidate selects the wrong response he will always be using correct target language and be guided back to the best response.

In conclusion, the intrinsic program will have the following major elements or features: linear, branching, error avoiding, error utilizing, unidirectional, multidirectional, feedback, program interaction, reinforcement, and compare feature.

Training Model-C

Foreign language aids, who are native speakers of the target language work with the candidate formally and informally (individually and in small groups) in the preparation of the student to perform the requirements of Training Model-A. In the formal training the foreign language aids would concentrate on one topic for practice, while in the informal practice more than one topic would be discussed as well as certain topics that would be supplementary to the training.

E.g., (1) Greetings: Given five different dialogues of four to ten lines each between two natives that speak in the target language on tape (audio or video) or live the student will identify each dialogue as he listens to it by recording on tape or writing on paper in English the formula for greeting and leave taking that was used or not used by the speakers in each dialogue. For example: (Recording on video or audio tape or live presentation . . . student listens in a laboratory or studio).

Script -- (Spanish)
Narrator -- Anita is standing at the gate when Mrs. Méndez, from down the block, goes by.

Anita: Buenas noches, señora Méndez.
¿Cómo está usted?

Sra. Méndez: Bien, ¿y tú?

Anita: Muy bien, señora. ¿Y Elena, cómo está?

Sra. Méndez: Esta bien, gracias. Bueno, Anita, hasta pronto.

Anita: Adiós, señora.

The student would record on tape the following correct response: The speakers greeted each other in the evening and took leave of each other. (Notice the student did not translate the dialogue, but simply identified that the greetings used were those appropriate for the evening, but that the formula for leave taking was a general one that would have been used in the morning, in the afternoon, or in the evening).

The student could have written on paper that the following responses were correct: The greetings used were for the evening but the formula for leave-taking used could be used at anytime of the day or night.

The student could have checked off the following correct responses on an objective form given him.

Greetings		Leave-taking
___	Morning	x
___	Afternoon	x
x	Evening	x

The student could have circled the following correct responses on a longer, more comprehensive objective form given him: (general indicates it could be used at any time of the day or night appropriately).

	Greetings	Leave-taking
Anita:	morning afternoon [✓ evening] general	morning afternoon evening general
Sra. Méndez:	morning afternoon evening general	morning afternoon evening general
Anita:	morning afternoon evening general	morning afternoon evening general
Sra. Méndez:	morning afternoon evening general	morning afternoon evening [✓ general]
Anita:	morning afternoon evening general	morning afternoon evening [✓ general]

Note: General could be circled when the response is an appropriate one even though it may not deal with greetings or leave-taking or it could be circled to indicate the greeting or leave-taking would be appropriate at any time of the day or night. This must be established before the test was administered.

(2) Names: Given five different dialogues of four to ten lines each between two native speakers in the target language the student will identify the target language names and titles by listening to an audio tape of the dialogues (video tape or live) and checking the correct responses on an answer sheet provided. For example:

Script -- (Spanish)
Narrator -- Paco and Alberto are on the bus.

Paco: Tú eres Alberto,¿verdad?

Alberto: Sí, soy Alberto Rivas. Y tú¿quién eres?

Paco: Soy Paco Esquivel

Alberto: Conozco a un muchancho, Roberto Esquivel. ¿Es tu hermano?

Paco: No tengo hermanos. Roberto es mi primo.

Answer sheet: Paco and Alberto -- no relation
Paco and Roberto -- no relation
Alberto and Roberto -- cousins

(5) Addresses: Given five different dialogues of four to ten lines each between two native speakers in the target language on tape (audio, or live) the student will listen to and write the addresses and telephone numbers in English of each of the speakers and those spoken about on an answer sheet provided him. For example:

Script -- (Spanish)
Narrator -- Paco is talking with his new friend Enrique.

Paco: ¿Dónde vives, Enrique?

Enrique: Vivo en la calle Colón, número 30. ¿Y tú¿dónde vives?

Paco: Paseo Buenavista, número 200. No está muy lejos de aquí.
¿Cuál es tú teléfono?

Enrique: 15-90-04.

Answer sheet: Paco: address, 200 Paseo Buenavista
telephone, not given

Enrique: address, 30 Colón Street
telephone, 15-90-04

(6) Time of day: Given five different dialogues of four to ten lines each between two native speakers in the target language on tape (audio - video or live) the student will listen to and write the time of day in hours and minutes on the answer sheet provided. For example:

Script -- (Spanish)
Narrator -- Late again, Mr. Gamboa is met at the office by his boss, Mr. Castillo.

Sr. Gamboa: Buenos días, señor Castillo.

Sr. Castillo: Señor Gamboa,¿sabe usted qué hora es?

Sr. Gamboa: Sí, señor. Según mi reloj, son las ocho.

Sr. Castillo: Señor Gamboa, por el mío, las ocho y veinte.

Answer sheet: Time

Sr. Gamboa	
Sr. Castillo:	(Asks Gamboa for the time.)
Sr. Gamboa:	8:00
Sr. Castillo:	8:20

(7) Meals: Given five different dialogues of four to ten lines each between two native speakers in the target language on tape (audio, video, or live) the student will listen and write in English the appropriate meal each speaker is eating or will answer on the answer sheet provided him. For example:

Script -- (Spanish)
Narrator -- Paco and Pablo enter a restaurant.

Paco: Yo quiero el bisté con papas fritas.

Camarero: Lo siento ya no hay. Pero el cordero asado está delicioso.

Paco: Muy bien. Tráigamelo, por favor.

Pablo: Y para mí el arroz con pollo.

Answer sheet:
Paco: roast lamb
Pablo: chicken with rice
Camarero: not given (waiter)

Area: Speaking

Skill: The candidate will demonstrate the ability to speak in the target language with a native speaker on the 78 topics listed under Listening (Minimal).

Hierarchy: Minimal

Criterion: Given a dialogue of four to ten lines on each of the topics the candidate will demonstrate the ability to speak in the target language with a native speaker on the 78 topics listed under Listening (Minimal).

Evaluation: Each dialogue will be recorded on audio or video tape to be evaluated. The candidate's speech must be without obvious faltering and with a pronunciation understandable to a native speaker and will record each topic until such is so and to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same patterns as were elaborated on Models A, B, and C, under Listening (Minimal) with the added dimension of speaking being emphasized and practiced in order to meet the speaking performance criteria.

Area: Reading

Skill: The student will demonstrate the ability to read material of the 78 topics listed under Listening (Minimal)

Hierarchy: Minimal

Criterion: Given five different dialogues of four to ten lines each in written form for each of the topics, the candidate will demonstrate the ability to read material on the 78 topics listed under Listening (Minimal) by answering factual questions about the content of each reading. The questions will be on tape, written or live by a native speaker in the target language.

Evaluation: The candidate will demonstrate the ability to read material on the 78 topics listed under Listening (Minimal) with 100% comprehension. He will be expected to answer all questions in the target language correctly and will record his responses on tape (audio) to be evaluated for the factual correctness of the answers as related to each reading and to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same patterns as were elaborated on Models A, B, and C under Listening (Minimal) with the concentration on reading in order to offer the candidate practice in reading to meet the reading performance criteria.

Area: Writing

Skill: The candidate will demonstrate the ability to write one report for each of the 78 topics listed under Listening (Minimal)

Hierarchy: Minimal

Criterion: Given in each of the 78 topics the title, a topic sentence and four to five questions in the target language and in written form to guide him, the candidate will demonstrate the ability to write our report for each of the 78 topics listed under Listening (Minimal).

Alternate routes: (one or any number of these routes may be selected) The training protocol will follow the same patterns as were elaborated on Models A, B, and C under Listening (Minimal) with the concentration on writing in order to offer the candidate practice in writing to meet the writing performance criteria.

Area: Linguistics

Skill: The student will demonstrate an understanding of the differences in the sound systems, forms, and structures of the target language and English.

Hierarchy: Minimal

Criterion: Given dialogues and narratives on tape (audio or video) and/or in written form on the 78 topics listed under Listening (Minimal) the candidate will describe in written form and in English one problem area in each of the topics to demonstrate an understanding of the differences in the sound systems, forms, and structures of the target language and English.

Evaluation: The candidate will demonstrate an understanding of the differences in the sound systems, forms, and structures of the target language and English without error and with clarity to the satisfaction of a committee of at least three specialists: a linguistic expert on the target language, a teacher of the target language and a native speaker of the target language. The total number of problems to be identified and described in written form correctly will vary depending on the target language involved.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same patterns as were elaborated on Models A, B, and C under Listening (Minimal) with the concentration on linguistics in order to provide the candidate with practice in diagnosing the possible language difficulties speakers of English learning the target language might encounter and practice in knowing what alternate suggestions he may offer to overcome inference caused by structural differences between English and the target language being studied.

Area: Culture

Skill: The candidate will demonstrate the principal ways in which the target culture differs from the American culture and essential elements of the target culture that are unique.

Hierarchy: Minimal

Criterion: Given dialogues or narratives on tape (audio or video) and/or in written form on each of the 78 topics listed under Listening (Minimal) the candidate will demonstrate the principal ways in which the target culture differs from the American culture and essential elements of the target culture that are unique in written form in English.

Evaluation: The candidate will demonstrate the principal ways in which the target culture differs from the American culture and essential elements of the target culture that are unique without error and with clarity to the satisfaction of a committee of at least three specialists: an expert on the culture of the target language, a teacher of the target language and a native speaker of the target language. The total number of differences between the cultures and the unique aspects of the target culture will vary depending on the target language involved.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same patterns as were elaborated for Models A, B, and C under Listening (Minimal) with the concentration on culture in order to provide the candidate with practice in meeting the cultural performance criteria.

Area: Professionalism

Skill: The candidate will demonstrate knowledge of the visual-audio-lingual behavioral objectives of teaching the target language in the elementary school as communicated and an understanding of the methods and techniques used for attaining these objectives.

Hierarchy: Minimal

Criterion: Given one or more FLES programs currently in use the candidate will demonstrate knowledge of the visual-audio-lingual behavioral objectives of teaching the target language in the elementary school as communication and an understanding of the methods and techniques used for attaining these objectives by writing a reaction or a criticism in English.

Evaluation: The candidate will demonstrate the knowledge of the visual-audio-lingual behavioral objectives of teaching the target language in the elementary school as communication and an understanding of the methods and techniques used for attaining these objectives without error and with clarity to the satisfaction of a committee of at least three specialists: a curriculum expert of the target language, a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected)

Training Model-A

Course work where the student is exposed by lecture to a FLES program of the target language being taught to speakers of English and is allowed to react and criticize each aspect of the program verbally in English as it is presented to give him practice in meeting the professionalism performance criteria.

Training Model-B

The student examines one or more programs available in the instructional materials center to help him meet the professional performance criteria.

Training Model-C

The student visits one or more elementary school districts to evaluate one or more programs as part of the professional performance criteria requirement.

Area: Listening

Skill: The candidate will demonstrate the ability to understand conversation at normal tempo, lectures and news broadcasts on radio or television.

Hierarchy: Good

Criterion: Given a conversation, a lecture, and a news broadcast of a minimum of 5 minutes and a maximum of 15 minutes each on tape (video or audio) for each of the 78 topics listed under Listening (Minimal) the candidate will demonstrate the ability to understand conversation at nornal tempo, lectures and news broadcasts on radio or television by recording on tape (audio or video) or in writing a summary synopsis, or abstract (not a translation into English) in the target language for each original presentation he listens to.

Evaluation: The candidate will be expected to perform with 100% accuracy and may listen to the topics as many times as he wishes. The candidate will be evaluated on 234 recordings or writings in the target language of his interpretations of the 78 conversations; the 78 lectures; and the 78 newsbroadcasts. His interpretations and the original presentations must never disagree and must match to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected)

Training Model-A

The student will take formal course work that will give him practice in the performance criteria required for Good Competence in Listening.

Training Model-B

The student will practice his performance of Listening for Good Competence on his own with the help of programmed instruction; computerized instruction, or any materials available in the instructional materials center.

Training Model-C

The student will be given formal work and informal practice with the help of foreign language aids (native speakers) that will be available to the student on a structured basis of 5 hours a week in small group instruction (two foreign language aids per five students). The student and the foreign language aids will also be required to live together in a foreign language house which will offer the possibility of more informal encounters. English will not be permitted to be spoken by the students or the foreign language aids at any time. Each room in the foreign language house will have a short wave radio and eventually a short wave television through satellites. The student will also have radio and video dial access to closed circuit programs for additional practice in the Listening performance in Good Competence.

Training Model-D

The student will be flown to the target country for a time period to fit his needs in accordance with the amount of practice he requires to meet the Good Competence requirement in Listening performance.

Area: Speaking

Skill: The candidate will demonstrate the ability to speak with a native of the target language with a command of vocabulary and syntax sufficient to express one's thoughts in conversation at normal speed with reasonably good pronunciation.

Hierarchy: Good

Criterion: Given each of the 78 topics listed under Listening (Minimal) the candidate will demonstrate the ability to speak with a native of the target language with a command of vocabulary and syntax sufficient to express one's thoughts in conversation at normal speed with reasonably good pronunciation.

Evaluation: The candidate will record for 5 to 15 minutes on tape (audio or video) each of the communications of the 78 topics to be evaluated. The candidate will be expected to perform with 100% accuracy and may speak with the native speaker until that proficiency is demonstrated to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same patterns as were elaborated on Listening (Good) with the added dimension of speaking being emphasized and practiced by the candidate to meet the speaking performance criteria.

Area: Reading

Skill: The candidate will demonstrate the ability to read prose and verse of average difficulty and mature content.

Hierarchy: Good

Criterion: Given a prose version and verse version on each of the 78 topics listed under Listening (Minimal) in the target language in written form, the candidate will demonstrate the ability to read prose and verse of average difficulty and mature content by answering factual questions in the target language.

Evaluation: The candidate will demonstrate the ability to read prose and verse of average difficulty and mature content with immediate and 100% comprehension. The candidate will record his answers on tape (audio or video) live, or in written form about the content of each reading to be evaluated for factual correctness of the answers as related to each reading to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same pattern as were elaborated on Models A, B, and C under Listening (Good) in order to offer the candidate practice in the reading performance criteria.

Area: Writing

Skill: The candidate will demonstrate the ability to write a simple "free composition" and a personal letter.

Hierarchy: Good

Criterion: Given the 78 topics listed under Listening (Minimal) the candidate will demonstrate the ability to write a simple "free composition" and a personal letter on each of the topics.

Evaluation: The candidate will perform the ability to write a simple "free composition" and a personal letter in the target language with clarity and 100% correctness in vocabulary, idiom and syntax to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected) The training protocols will follow the same patterns as were elaborated on Models A, B, and C under Listening (Good) in order to offer the student practice in the writing performance competence.

Area: Linguistics

Skill: The candidate will demonstrate the knowledge of the development and the present characteristics of the target language.

Hierarchy: Good

Criterion: Given dialogues and narratives on tape (audio and video) on each of the 78 topics listed under Listening (Minimal) the candidate will demonstrate the knowledge of the development and the present characteristics of the target language by giving examples of the development in each topic.

Evaluation: The candidate will elaborate in written form in the English language by describing the examples of the development and the present characteristics of the target language without error and with clarity for evaluation purposes to the satisfaction of a committee of at least three specialists: a linguistic expert of the target language, a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these routes may be selected) Training Models A, B, and C of Listening (Good), stress on linguistics.

Area: Culture

Skill: The candidate will demonstrate first hand knowledge of some literary masterpieces and acquaintance with the geography, history, art, social customs and mores, and contemporary civilization of the target people.

Hierarchy: Good

Criterion: Given literary material in the target language relative to some literary masterpieces and acquaintance with the geography, history, art, social customs and mores, and contemporary civilization of the target people, the candidate will demonstrate first hand knowledge in written form in English by discussing each aspect of the geography, history, art, social customs and mores, and contemporary civilization of the target people and the relationship to each other.

Evaluation: The candidate will demonstrate first hand knowledge of some literary masterpieces and acquaintance with the geography, history, art, social customs and mores, and contemporary civilization of the target people accurately and without error to the satisfaction of a committee of at least three specialists: an expert in the culture of the target language, a teacher of the target language, and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Culture.

Area: Professionalism

Skill: The candidate will demonstrate the knowledge of the use of specialized teaching techniques and the relation of FLES teaching to other areas of the curriculum and the ability to evaluate the professional literature of foreign language teaching.

Hierarchy: Good

Criterion: Given a specific school district to work with the candidate will demonstrate all aspects of the use of specialized teaching techniques and the relation of FLES teaching to other areas of the curriculum and the ability to evaluate the professional literature of foreign language teaching by writing in English a FLES Visual-Audio-Lingual Program for that specific school district or recommending one that will be custom-built to fit the needs of that particular school district.

Evaluation: The candidate will demonstrate the knowledge of the use of specialized teaching techniques and the relation of FLES teaching to other areas of the curriculum and the ability to evaluate the professional literature of foreign language teaching accurately and without error to the satisfaction of a committee of at least three specialists: a curriculum expert of the target language, a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good) stress on professionalism.

Area: Listening

Skill: The student will demonstrate the ability to follow closely and with ease all types of standard speech, such as rapid or group conversation and mechanically transmitted speech on each of the following topics: (1) problems of the target country, (2) newscasts, (3) crime, (4) science fiction, (5) geography, (6) missiles, (7) astronomy, (8) telephone, (9) sports, (10) contemporary plays, (11) physics, (12) psychology, (13) psychiatry, (14) history, (15) aviation, (16) money exchange, (17) television, (18) educational television, (19) proper etiquette, (20) linguistics, (21) restaurant, (22) driver training, (23) traffic, (24) interior decorating, (25) gardening, (26) cooking, (27) table service, (28) women, (29) agriculture, (30) social life, (31) art, (32) religion, (33) service clubs, (34) the atom, (35) food traditions, (36) table manners, (37) luck, (38) history of the target country, (39) gifts, (40) literature, (41) humor and comedy, (42) films, (43) radio, (44) theater, (45) comparative literature, (46) music, (47) mystery, (48) poetry, (49) lottery; (50) journalism, (51) geology, (52) economics, (53) business, (54) war, (55) military, (56) fairs, (57) dress, (58) stores, (59) barbershops, (60) musicians, (61) embassys, (62) United Nations, (63) education, (64) the target language, (65) special schools, (66) government, (67) politics, (68) national monuments and heroes, (69) vision, (70) university studies and life, (71) law, (72) birthdays, (73) counseling, (74) coffee, (75) liquor,

(76) beer, (77) pedestrians, (78) automobiles, (79) architecture, (80) salesmen, (81) tourism, (82) national unity, (83) vacation spots, (84) world fairs, (85) cultural exchanges, (86) the art of writing letters, (87) urban affairs, and (88) suburban affairs. (These topics are only suggestive, since the topics selected might differ depending on the target language being taught. It is also suggested that additional general and familiar topics be added as the need or interest indicates.)

Hierarchy: Excellent

Criterion: Given a dialogue or narrative in the target language on each of the 88 topics listed above on tape (audio or video) to listen to, of 5 to 15 minutes each, the candidate will demonstrate the ability to follow closely and with ease all types of standard speech, such as rapid or group conversation and mechanically transmitted speech on each of the following topics: (1) problems of the target country, (2) newscasts, (3) crime, (4) science fiction, (5) geography, (6) missiles, (7) astronomy, (8) telephone, (9) sports, (10) contemporary plays, (11) physics, (12) psychology, (13) psychiatry, (14) history, (15) aviation, (16) money exchange, (17) television, (18) educational television, (19) proper etiquette, (20) linguistics, (21) restaurant, (22) driver education, (23) traffic, (24) interior decorating, (25) gardening, (26) cooking, (27) table service, (28) women, (29) agriculture, (30) social life, (31) art, (32) religion, (33) service clubs, (34) the atom, (35) food traditions, (36) table manners, (37) luck, (38) history of the target country, (39) gifts, (40) literature, (41) humor and comedy, (42) films, (43) radio, (44) theatre, (45) comparative literature, (46) music, (47) mystery, (48) poetry, (49) lottery, (50) journalism, (51) geology, (52) economics, (53) business, (54) war, (55) military, (56) fairs, (57) dress, (58) stores, (59) barbershops, (60) musicians, (61) embassys, (62) United Nations, (63) education, (64) the target language, (65) special schools, (66) government, (67) politics, (68) national monuments and heroes, (69) vision, (70) university studies and life, (71) law, (72) birthdays, (73) counseling, (74) coffee, (75) liquor, (76) beer, (77) pedestrians, (78) automobiles, (79) architecture, (80) salesmen, (81) tourism, (82) national unity, (83) vacation spots, (84) world fairs, (85) cultural exchanges, (86) the art of writing letters, (87) urban affairs, and (88) suburban affairs by recording on tape (audio or video) or in written form a summary, synopsis, or abstract in the target language of each dialogue or narrative.

Evaluation: The candidate may listen to each dialogue or narrative as many times as he wishes and will be expected to perform with 100% accuracy. The candidate will be evaluated on the 88 recordings or writings. His interpretations and the original presentations must never disagree and must always match to demonstrate 100% listening accuracy to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, C, and D of Listening (Good), stress on Listening (Excellent).

Area: Speaking

Skill: The candidate will demonstrate the ability to speak the target language fluently, approximating native speech in vocabulary, intonation and pronunciation and demonstrate the ability to exchange ideas and be at ease in social situations with native speakers.

Hierarchy: Excellent

Criterion: Given the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to speak the target language fluently, approximating native speech in vocabulary, intonation and pronunciation and demonstrate the ability to exchange ideas and be at ease in social situations with native speakers by speaking with native speakers for 5 to 15 minutes on each topic. The candidate will record on tape (audio or video) his exchange of ideas with the native speakers.

Evaluation: The candidate will be expected to demonstrate the ability to speak the target language fluently, approximating native speech in vocabulary, intonation and pronunciation and demonstrate the ability to exchange ideas and be at ease in social situations with native speakers with 100% accuracy and may speak with the native speakers on each topic as many times as he wishes in order to meet the required proficiency. Each of the 88 recordings will be evaluated separately to the satisfaction of a committee of at least two specialists: a teacher of the foreign language and a native speaker of the foreign language.

Alternate routes: (one or any number may be selected) Training Models A, B, C, and D of Listening (Good), stress on Speaking (Excellent).

Area: Reading

Skill: The candidate will demonstrate the ability to read almost as easily as in English material of considerable difficulty.

Hierarchy: Excellent

Criterion: Given readings in the target language on each of the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to read almost as easily as in English material of considerable difficulty by answering written factual questions in the target language with written responses on tape or live about the content after each reading.

Evaluation: The candidate will be expected to perform with 100% comprehension. He will answer all questions in the target language correctly and the written or recorded responses on each reading will be evaluated for the factual correctness of the answers as related to each reading to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Reading (Excellent).

Area: Writing

Skill: The candidate will demonstrate the ability to write with idiomatic naturalness ease of expression, and some feeling for the style of the language and the ability to write a business letter.

Hierarchy: Excellent

Criterion: Given each of the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to write with idiomatic naturalness ease of expression, and some feeling for the style for the language and the ability to write a business letter by writing a brief report in the target language for each topic and given a situation the candidate will write a business letter in the target language.

Evaluation: The candidate will demonstrate the ability to write with idiomatic naturalness ease of expression, and some feeling for the style of the language and the ability to write a business letter without error to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Writing (Excellent).

Area: Linguistics

Skill: The candidate will demonstrate the knowledge of applied and descriptive linguistics.

Hierarchy: Excellent

Criterion: The candidate will demonstrate the knowledge of applied and descriptive linguistics by writing a report in English on the research in the field in relation to his target language.

Evaluation: The candidate will demonstrate the knowledge of applied and descriptive linguistics without error and with clarity to the satisfaction of a committee of at least three specialists: a linguistic expert of the target language, a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Linguistics (Excellent).

Area: Culture

Skill: The candidate will demonstrate an enlightened understanding of the target people and their culture.

Hierarchy: Excellent

Criterion: The candidate will demonstrate an enlightened understanding of the target people and their culture by reporting in English in written form or orally on tape (audio or video) on the systematic descriptions of the target people, their culture, their literature, and their arts.

Evaluation: The candidate will demonstrate an enlightened understanding of the target people and their culture accurately and without error to the satisfaction of a committee of at least three specialists: an expert on the culture of the target language, a teacher of the target language, and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, C, and D Listening (Good), stress on Culture (Excellent).

Area: Professionalism

Skill: The candidate will demonstrate a mastery of recognized visual-audio-lingual teaching methods, evidence of breadth and depth of professional outlook, and the ability to experiment with and evaluate new teaching methods and techniques.

Hierarchy: Excellent

Criterion: The candidate will demonstrate a mastery of recognized visual-audio-lingual teaching methods, evidence of breadth and depth of professional outlook, and the ability to experiment with and evaluate new teaching methods and techniques by his direct involvement in these matters and by written or oral (live, tape, or video) reports in English of said involvement.

Evaluation: The candidate will demonstrate a mastery of recognized visual-audio-lingual teaching methods, evidence of breadth and depth of professional outlook, and the ability to experiment with and evaluate new teaching methods and techniques accurately and without error to the satisfaction of a committee of at least three specialists: a curriculum expert of the target language, a teacher of the target language, and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Professionalism (Excellent).

Area: Listening

Skill: The candidate will demonstrate the ability to orally translate simultaneously from the target language to English all types of standard speech, such as rapid or group conversation and mechanically transmitted speech.

Hierarchy: Superior

Criterion: Given dialogues or narratives of 5 to 15 minutes each on tape (audio or video) in the target language for each of the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to orally translate simultaneously from the target language to English all types of standard speech, such as rapid or group conversation and mechanically transmitted speech.

Evaluation: The candidate will demonstrate the ability to orally translate simultaneously from the target language to English all types of standard speech, such as rapid or group conversation and mechanically transmitted speech without error. He will be evaluated on the 88 recordings and his translations and the original presentations must never disagree and must always match to demonstrate the required proficiency to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Listening (Superior).

Area: Speaking

Skill: The candidate will demonstrate the ability to orally translate simultaneously from English to the target language and vice-versa, fluently, approximating native speech in vocabularly, intonation and pronunciation, an exchange of ideas between a native speaker of English and a native speaker of the target language communicating in their respective languages through the interpretation of the candidate. The candidate will establish an atmosphere of ease in the social situation between the two speakers.

Hierarchy: Superior

Criterion: Given each of the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to orally translate simultaneously from English to the target language and vice-versa, fluently, approximating native speech in vocabulary, intonation and pronunciation, an exchange of ideas between a native speaker of English and a native speaker of the target language communicating in their respective languages through the interpretation of the candidate by recording each social situation of 5 to 15 minutes on tape (audio or video).

Evaluation: The candidate will demonstrate the ability to orally translate simultaneously from English to the target language and vice-versa, fluently, approximating native speech in vocabularly, intonation and pronunciation, an exchange of ideas between a native speaker of English and a native speaker of the target language communicating in their respective languages through the interpretation of the candidate with 100% accuracy, and may attempt each topic as many times as he wishes to meet the proficiency required. The translations must never disagree and must always match the original communications to the satisfaction of a committee of at least two specialists: a native speaker of the target language and a teacher of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, and C of Listening (Good), stress on Speaking (Superior).

Area: Reading

Skill: The candidate will demonstrate the ability to translate orally on tape (audio or video) or in written form from the target language to English as he reads material of considerable difficulty.

Hierarchy: Given readings on each of the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to translate orally on tape (audio or video) or in written form from the target language to English as he reads material of considerable difficulty.

Evaluation: The candidate will be expected to perform with 100% accuracy and may read each topic as many times as he wishes to achieve the required proficiency. The translations and the original readings must never disagree and must always match to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be chosen) Training Models A, B, and C of Listening (Good), stress on Reading (Superior).

Area: Writing

Skill: The candidate will demonstrate the ability to write original articles in the target language with idiomatic naturalness, ease of expression, and some feeling for the style of the language and must publish one of the articles.

Hierarchy: Superior

Criterion: Given the 88 topics listed under Listening (Excellent) the candidate will demonstrate the ability to write original articles in the target language with idiomatic naturalness, ease of expression, and some feeling for the style of the language and must publish one of the articles by writing one article for each topic.

Evaluation: The candidate will demonstrate the ability to write original articles in the target language with idiomatic naturalness, ease of expression, and some feeling for the style of the language and must publish one of the articles without error to the satisfaction of a committee of at least two specialists: a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number of these may be selected) *Training Models A, B, C, and D* of *Listening* (Good), stress on *Writing* (Superior).

Area: Linguistics

Skill: The candidate will demonstrate the knowledge of comparative and historical linguistics in relation to his target language.

Hierarchy: Superior

Criterion: The candidate will demonstrate the knowledge of comparative and historical linguistics in relation to his target language by reporting in written form or in oral form on tape (audio or video) in English on the research in the field.

Evaluation: The candidate will demonstrate the knowledge of comparative and historical linguistics in relation to his target language without error to the satisfaction of a committee of at least three specialists: a linguistic expert of the target language, a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) *Training Models A, B, and C* of *Listening* (Good), stress on *Linguistics* (Superior).

Area: Culture

Skill: The candidate will demonstrate knowledge of the target people and their culture by an in-depth analysis of the following points: (1) symbolism, (2) value, (3) authority, (4) order, (5) ceremony, (6) love, (7) honor, (8) humor, (9) beauty, and (10) spirit.

The following aspects will be discussed under each of these points respectively: (1) target language, literature, art, myths, politics, and religion; (2) personal preference and rejection, conscience, morality, and philosophy; (3) whose word is accepted and acted upon at various ages in one's life and in various situations and circumstances; (4) dispositions available toward a clear, methodical, and harmonious arrangement of thoughts and things in the life of both individual and community; (5) human fondness or lack of it for dress, ritual and congregations on gay and solemn occasions; (6) the attachment of parent and child, of husband and wife, the devotion of one friend to another, the attitude of an individual toward a supreme being and the reciprocal of aggression; (7) standards of personal conduct that give evidence of attitude toward ourselves, our families, friends, and country; (8) the importance and popularity of the sense of what is witty, comic, and laughable and also what is found to be humorous and how it varies from one age group to another and from the target culture to the American culture; (9) that which is over and above the utilitarian and the practical, innovation, perfection, and the aesthetic sense, and (10) man's awareness of himself as man, man's thoughts ranging in time and space far from the present contemplation of reality and non-reality and his quest in search of what it is that he is.

Hierarchy: Superior

Criterion: The candidate will demonstrate the knowledge of the target people and their culture by an in-depth analysis of the following points: (1) symbolism, (2) value, (3) authority, (4) order, (5) ceremony, (6) love, (7) honor, (8) humor, (9) beauty, and (10) spirit by writing a report in English in written form or recorded orally on tape (audio or video).

Evaluation: The candidate will demonstrate knowledge of the target people and their culture by an in-depth analysis of the following points: (1) symbolism, (2) value, (3) authority, (4) order, (5) ceremony, (6) love, (7) honor, (8) humor, (9) beauty, and (10) spirit without error to the satisfaction of a committee of at least three specialists: an expert on the culture of the target language, a teacher of the target language and a native speaker of the target language.

Alternate routes: (one or any number may be selected) Training Models A, B, C, and D of Listening (Good), stress on Culture (Superior).

Area: Professionalism

Skill: The candidate will propose a model ungraded FLES target language program and will elaborate on the following aspects: (1) behavioral objectives, (2) sequence, (3) materials, (4) articulation (flexible scheduling), (5) supervision, (6) evaluation, (7) inservice training and (8) public relations. The candidate will also publish a dissertation on one of the following aspects on the teaching of the target language in the elementary schools: (1) linguistics, (2) the physiology and psychology of language learning, (3) analysis and teaching of the culture and cross cultural context, (4) teaching the foreign literature, (5) curricular problems and developments, (6) teacher education and qualifications, (7) materials and equipment, (8) methods, or (9) testing.

Hierarchy: Superior

Criterion: The candidate will propose a model ungraded FLES target language program and will elaborate on the following aspects: (1) behavioral objectives, (2) sequence, (3) materials, (4) articulation (flexible scheduling), (5) supervision, (6) evaluation, (7) inservice training and (8) public relations to the satisfaction of a committee of at least three specialists: a curriculum expert of the target language, a teacher of the target language and a native speaker of the target language.

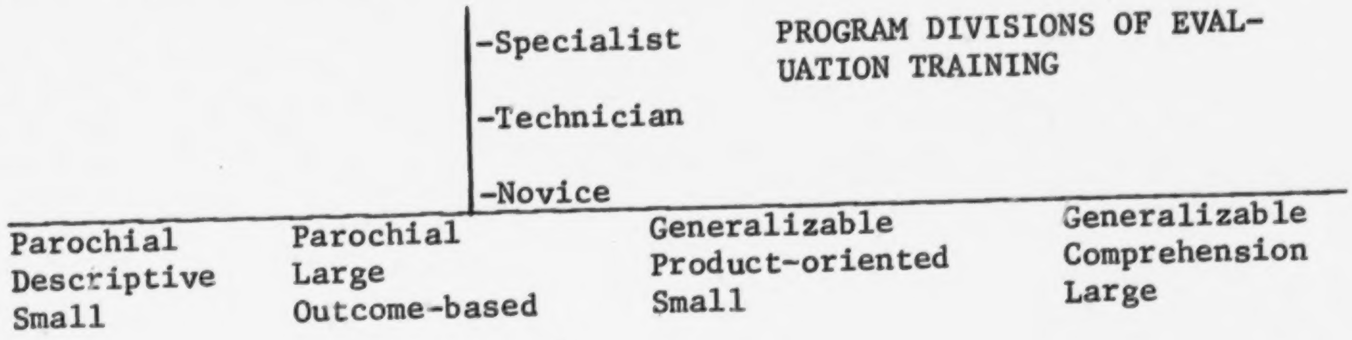
Alternate routes: (one or any number may be selected) Training Models A, B, C, and D, Listening (Good), stress on Professionalism (Superior).

EVALUATION SKILLS CRITERIA APPENDIX

Appendix - EVALUATION SKILLS CRITERIA

In the design of the evaluation curriculum, program parameters will be described and specific areas under each parameter will be located in the differentiation plane by relative positions on the horizontal and vertical axes. The vertical dimensions will be designated by N for novice, T for technician, and S for specialist. The horizontal dimensions will be designated by PS for parochial, objective based (descriptive) evaluations, PL for parochial, outcome-based evaluations, GS for generalizable, product-oriented evaluations, and GL for generalizable, comprehensive evaluations usually done on a large scale.

Perhaps an explanation is needed to clarify the designated points on the two intersecting continua. The vertical identification points of N, T, and S do not describe discrete roles along the vertical axis but identify model roles which might occur in a differentiated staff. The novice may well be a classroom teacher, a plant administrator, or a clerk designated to carry evaluation on an applied basis void of major decision-making and value judgments. The technician role could be envisioned as only placed in a school on the same level as a teacher or in a school district on the same level as a placement officer. The role would assume knowledge of evaluation at the design as well as applied level and would assume interpretation and minor decision-making roles. The specialist role would be envisioned to fall into line with the supervisory, curriculum specialist status and the specialist may well be a person placed in the role as an evaluator or a curriculum area or as a director of evaluation services for a school or a district. This role will include not only a mastery of evaluation skills but also a major decision-making role in the quality control of education.



PROGRAM DIVISIONS OF EVALUATION TRAINING

The horizontal identification points again only describe model points along a continuum; this continuum being based upon types of evaluations which normally occur in education. The PS point identifies the evaluation that would normally occur in a school or more specifically in a classroom. This evaluation need is frequently required to validate a teaching method, to validate a programmed instruction booklet, to identify the effects of a unit of instruction or to test out a problem-solving hypothesis generally contained to a specified group or a highly limited population. This type of evaluation can generally be characterized as a problem-solving venture, parochial in nature, involved in small samples and few variables (usually delimited by program objectives), and basically intended to provide quick information on program effectiveness and on strength and weaknesses of program segments. The PL point identifies another evaluation need; however, it is normally of a longer scope then the PS type of evaluation. Evaluation needs that fall near the PL point seek to assess "total" outcomes of a unit of instruction or of a method of instruction. In this order of evaluation, multiple outcomes (some anticipated and some not anticipated) must be measured. Although still parochial in nature in that the evaluation is still geared to a specific limited population and to a problemsolving basis, the PL evaluations begin to deal with larger groups (for instance, a gradelevel in a school) and with multi-variate criteria.

The GS and GL points refer to evaluations that seek generalizable information as well as information for program revision and proper management. The GS evaluation refers to evaluations designed to produce generalizable information on specific programs. This type of evaluation tends to usually be district-wide and tends to look at the appropriateness and efficiency of curriculum for a grade level or for a district. The GL evaluation seeks not only to provide such generalizable data but also seeks to attach quality-control, i.e., cost-accounting, component coordination, and policy-interpreting, dimensions to such programs and to tie evaluation results to community needs. Is SMSG mathematics providing the essential curriculum for district X in terms of needs in district X, in terms of resources available in district X or in terms of the values maintained by district X? In the parochial evaluations the trend is toward judgment based upon a set of standards. In the generalizable forms of evaluations, the judgment basis is a relative one; that is to say, programs are compared for appropriateness and efficiency. The listing of specific performance criteria will be reported in three areas; assessment, analysis, and application.

First Area: Assessment

Basically, performance criteria can be written for several categories of activities related to assessment processes. Perhaps the most descriptive way of demonstrating the nature of such performance criteria is to delineate the parameters of the categories and give criteria examples for each level of competence.

Assessment Parameter I. Data Types

A. Observation Methods

1. Activity Description
2. Case Study
3. Check lists
4. Frequency Counting
5. Rating Schedules

B. Questionnaires

1. Survey form
2. Self-report Schedules
3. Interviews
4. Opinionnaires

C. Attitude Assessments

1. Cumulative Scale
2. Equal Appearing Intervals
3. Social Distance
4. Summated Scales
5. Scale Discriminative
6. Semantic Differential

D. Standardized Tests

1. Intelligence Tests
2. Aptitude Measures
3. Achievement Tests
4. Personal-Social Adjustment Measures
5. Psychological Traits
6. Personality Tests
7. Preference Inventories
8. Interest Profiles
9. Value Inventories

E. Projective Techniques

F. Classroom Tests

1. Essay
2. Objective

G. Resource Analysis

H. Budgeting

Generally performance criteria in assessment parameter I relate to eight basic activities, namely those designed to demonstrate: (1) knowledge of the availability of a particular instrument (which could include responding with an example and description of several instruments appropriate for the measurement of a particular variable given as a stimulus), (2) the capability of administrating a particular instrument (which could include the trainee actually giving designated instruments to student groups and altering the setting to desirable environmental conditions), (3) the ability to review research on the previous utilization of an instrument (would include the writing of a research report on a given instrument), (4) the ability to score an instrument (which could be shown by scoring several given tests), (5) the ability to interpret scores made on a particular instrument (which could be demonstrated by producing descriptions of students from given profiles), (6) the competence to construct particular instruments (which could be demonstrated by producing sample items for particular classes of variables), (7) the ability to draw conclusions from results of specific assessments (which can be shown through a simulated problem made up of several instrument results from which several relevant conclusions can be drawn), and (8) the process of instrument standardization (which could be shown by actually carrying out the process). The specific criteria activities will be called by the underlined words in assigning the activities to the types of data lists for particular levels of training differentiation. After the assignment of level has been made, example sets with alternative instructional routes will be described.

Examples of specific performance criteria which may be devised for the eight basic types of criteria required under Parameter I of Assessment follow:

(1) Knowledge: The trainee would identify three standardized achievement testing programs which include specific tests to identify reading levels for ten-year old children, given the variable ten-year old reading levels. The trainee would further stipulate the companies from which these tests could be obtained and where information upon these tests could be found.

(2) Administering: The trainee would administer an Embedded Figures Test to a group of ten students in a noisy (however, there would be ways to eliminate the noise source), dim (there would also be available sources to improve lighting) classroom. Success would be judged on the use of the available means to improve the testing situation and upon the degree to which the trainee followed the administration manner.

(3) Research: The trainee would describe the characteristics including strengths and weaknesses, of a given instrument (for instance, the California Psychological Inventory) and review the major research studies in which the instrument played an important role. The report would be judged satisfactory if the trainee has covered at least one major study seeking validation of the instrument, a study of the consistency of the instrument, and a study which establishes a functional role of the instrument.

(4) Score: The trainee would correctly score (1) The Edwards Personnel Preference Index, The Alport-Vernon Instrument on Values, a Likert Attitude Scale, a multiple-choice test and an essay examination.

(5) Interpret: The trainee would write a verbal description of a student from a given profile of test-scores including: an aptitude measure, an attitude scale, an achievement test, an interest inventory, and an interview directed toward social adjustment information. The verbal description should include any significant deviation from the norm as shown by the test data, and present at least one major charac-

teristic identified by each test.

(6) Construct: The trainee, given a topic such as causes of the civil war, construct four different test items (i.e., items that vary over type of test, for example: an essay question, a multiple choice question, a performance test, a matching question, a completion question, etc.) designed to measure a specific concept; four additional items to measure a given fact and four more test items to measure a process.

(7) Conclusions: The trainee must identify four of the five definite a priori conclusions from a simulated set of data which contains five pre-determined pertinent and consistent conclusions.

(8) Standardization: The trainee must standardize a test (for PS and PL trainees one designed to measure content: for GS and GL trainees one designed to measure attitudes) which has been developed at the University on a given sample of subjects. Thoroughness and clarity of procedures described by the American Psychological Association manual on testing procedures will form the major basis for determining adequacy of performance.

An Outline and General Strategy for Evaluation Training

The description of the performance criteria for the assessment parameter, data types, appears in outline form, so as to present a comprehensive picture of the organization of performance criteria for novice, technician, and specialist levels of competence. It may be observed that the novice training is so organized that they will always have at least the ability to communicate at some level with specialists. A general set of methods for evaluation may insure better evaluation training for teachers and give them a structure wherein they may view evaluation in totally new perspectives.

Differentiated Level	Content area within the parameter	Criteria Areas to be Met.
For N- PS	A-1,4,5	Knowledge, Administer, Research, Score
	D-1,2,3	Knowledge, Administer, Research, Score
	F-1,2	Knowledge, Administer, Research, Score Construct, and Interpret
For N- PL	A-1,2,3,4,5	Knowledge, Administer, Research, Score
	B-1,3,4	Knowledge, Administer, Research, Score
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score
	D-1,2,3,7,8,9	Knowledge, Administer, Research, Score
	D-4,5,6	Knowledge, Research
	F-1,2	Knowledge, Research, Score, Interpret
For N- GS	A-1,2,3,4,5	Knowledge, Interpret
	B-1,2,3,4	Knowledge, Administer, Research, Score Construct
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score
	D-1,2,3,7,8,9	Knowledge, Research, Administer, Score
	D-4,5,6	Knowledge, Research
	E-	Knowledge, Research
For N- GL	A-1,2,3,4,5	Knowledge, Interpret
	B-1,2,3,4	Knowledge, Administer, Research, Score Construct
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score
	D-1,2,3,7,8,9	Knowledge, Research, Administer, Score
	D-4,5,6	Knowledge, Research
	E-	Knowledge, Research
	G-	Knowledge, Score, Construct
For T- PS	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret
	D-1,2,3,7,8,9	Knowledge, Administer, Research, Score Construct, Interpret
	F-1,2	Knowledge, Administer, Research, Score Construct, Interpret
	D-4,5,6	Knowledge, Research

Key: N=Novice
T=Technician
S=Specialist
PS=Parochial, objective-based
PL=Parochial, outcome based
GS=Generalizable, protest oriented
GL=Generalizable, comprehensive

Differentiated Level	Content area within the parameter	Criteria Areas to be Met
For T- PL	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret
	B-1,3,4	Knowledge, Administer, Research, Score Construct, Interpret
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret
	D-1,2,3,7,8,9	Knowledge, Research, Administer, Score Construct, Interpret
	D-4,5,6	Knowledge, Research
	F-1,2	Knowledge, Research, Administer, Score Construct, Conclude, Standardize
For T- GS	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret
	B-1,2,3,4	Knowledge, Administer, Research, Score Construct, Interpret
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret
	D-1,2,3,7,8,9	Knowledge, Administer, Research, Score Construct, Interpret
	D-4,5,6	Knowledge, Research
	E-	Knowledge, Research
	G-	Knowledge, Research
For T- GL	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret
	B-1,2,3,4	Knowledge, Administer, Research, Score Construct, Interpret
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret
	D-1,2,3,7,8,9	Knowledge, Administer, Research, Score Construct, Interpret
	D-4,5,6	Knowledge, Research
	E-	Knowledge, Research
	G-	Knowledge, Research
	H-	Knowledge, Research
For S- PS	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	D-1,2,3,4,5,6 7,8,9	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	F-1,2	Knowledge, Administer, Research, Score, Construct, Interpret, Conclude, Standardize

	D-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
For S- PL	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	B-1,2,3,4	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	D-1,2,3,4,5,6, 7,8,9	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	F-1,2	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	G-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
For S- GS	A-1,2,3,4,5	Knowledge, Administer, Research, Score, Construct, Interpret, Conclude, Standardize
	B-1,2,3,4	Knowledge, Administer, Research, Score, Construct, Interpret, Conclude, Standardize
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score, Construct, Interpret, Conclude, Standardize
	D-1,2,3,4,5,6, 7,8,9	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	E-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	G-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
For S- GL	A-1,2,3,4,5	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	B-1,2,3,4	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
	C-1,2,3,4,5,6	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize

D-1,2,3,4,5,6, 7,8,9	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
E-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
G-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize
H-	Knowledge, Administer, Research, Score Construct, Interpret, Conclude, Standardize

Assessment Parameter II. Data Characteristics

A. Reliability

1. Types
2. Computational Methods
3. Interpretations
4. Theoretical Considerations

B. Validity

1. Types
2. Computational Methods
3. Interpretations
4. Theoretical Considerations

C. Objectivity

D. Accuracy

D. Fidelity

Performance criteria for the N-level of evaluation training should include: (1) the ability to define operationally A-1 and B-1 and, (2) the ability to describe correct computational procedures for A-2 and B-2.

Performance criteria for the T-level of evaluation training should include: (1) the performance criteria for the N-level; (2) the competence to draw interpretations of test effectiveness from given reliability and validity conditions, A-3 and B-3; and (3) the ability to operationally define C, D, and E.

Performance Criteria for the S-level of evaluation training should include: (1) the performance criteria for the T-level; (2) the ability to verbally discuss the theoretical considerations of reliability and validity, A-4 and B-4; and (3) the ability to construct models to show pertinence of C, D, and E to specific measurements problems.

Assessment Parameter III Data Management

A. Observer Training
B. Scoring Machinery
C. Tally Machinery
D. Profile Building
E. Data Recording
F. Data Storage
G. Data Retrieval

For the PS-PL class performance criteria for the N-level of evaluation training would be concerned with the management of several small amounts of data which must be kept separate and processed quickly and efficiently within a given structure. Hence, an appropriate criteria would be to set up data collection techniques for three different teachers (three different evaluations) and to properly process such data within a limited resource structure.

For the PS-PL class, T-level trainees, the performance criteria would be the same as for the N-level except the T-level personnel would also be concerned with developing the structure within a given set of resources.

For the PS-PL class, S-level trainees would be expected to meet both N-level and T-level criteria and must demonstrate a knowledge of developing techniques adequate to design data-systems.

For the GS-GL class, performance criteria for the N-level of evaluation training would be concerned with the management of large amounts of data collected on a district-wide basis. (Hence, the criteria might be to sample, gather, collect, process, store, and retrieve three particular information measures for a large population within a prescribed structure).

For the GS-GL class, T-level, the criteria would be the same as for the N-level and T-level would have to be met and, in addition, cost estimate of operation would have to be specified by the trainee.

Assessment Parameter IV Data Selection

A. Sampling

    1. Item sampling
    2. Population sampling

B. Proper choice of kind of data to provide an appropriate measure

    1. Choosing between nominal, ordinal, interval, or ratio measures
    2. Matching type of tests to

        a. Objectives
        b. Anticipated outcomes
        c. Possible outcomes

Basically, performance criteria for parameter IV should be met by all trainees.

For A1, the trainees should utilize item-sampling techniques to gain repeated measures on a given list of criteria variables from a given item pool.

For A2, the trainees should be able to describe proper sampling techniques for a given list of problem populations.

For B1, the trainees must be able to define operationally the four scaling forms and give examples of each form for a given set of items.

For B2, the trainees must select measures and justify their selections for a given set of outcomes, for a given set of instructional objectives, and for a given set of educational manipulations.

Second Area: Analysis

In describing performance criteria for the analysis section, the parameters will be ascertained in terms of functional parts of the analysis. Since much of the content of the analysis section is in statistics and research design, both knowledge of operation or process and theoretical principles must be gained by the trainees.

Content	Level
Analysis Parameter I. Analysis Tools	
A. Computational Machinery	
1. Calculators	N T N S (PS-PL-GS-GL)
2. Computers	
a. Programming	N T N (PS-PL-GS-GL)
b. Simulation	S (PS-PL-GS-GL)
B. Pen charting and other scheduled techniques	N T N S (GS-GL)
Analysis Parameter II Statistics	
A. Descriptive	
1. Percentiles, quartiles, stanines	N T S (PS-PL-GS-GL)
2. Measures of central tendency and variability	N T S (PS-PL-GS-GL)
3. Profile and Case Studies	N T S (PS-PL)
B. Gain-score analysis	
1. Differences	N T S (PS-PL)
2. Relationships	N T S (PS-PL)
C. Inferential	
1. T-tests	T S (PS-PL-GS-GL)
2. Analysis of Variance	T S (PS-PL-GS-GL)
3. Analysis of Covariance	T S (PS-PL-GS-GL)
4. Non-parametrics	T S (PS-PL-GS-GL)

D. Relational	N T S (PS-PL-GS-GL)
1. Chi-square	N T S (PS-PL-GS-GL)
2. Correlation	T S (PS-PL-GS-GL)
3. Non-parametrics	T S (PS-PL-GS-GL)
E. Multivariate	T S (PS-PL)
F. Bayesian	S (GS-GL)

Analysis Parameter III Design

A. Research Design	
1. Threats to interval validity	T S (PS-PL)
2. Threats to external validity	T S (GS-GL)
3. Control of variance	T S (PS-PL-GS-GL)
B. Systems	
1. Analysis	S (PS-PL)
2. Decision-theory	S (GS-GL)
C. Quality Control	
1. Budget-making	S (PS-PL-GS-GL)
2. Cost-accounting	S (PS-PL-GS-GL)

Third Area: Application

In the designation of parameters for the application section, functions of the evaluators were used to establish the categories. Perhaps, the application level is the place where differentiation of training becomes most apparent. In the development of performance criteria three formats of criteria will be utilized for instance: (1) where criteria are related to consultation activities, the trainees will be required to carry out the process to personnel selected for similarity to future service receivers on relevant problems to the satisfaction of an expert observer, (2) where criteria are related to design activities, the trainees will be required to describe, diagram, and discuss solutions to problem settings; feasibility and efficiency of the designs will be used to determine quality of the performance, and (3) where criteria are related to decision-making the trainees will be required to interact meanfully in simulated systems.

Application Parameter I Consultation Activities

A. With teachers	
1. How to write items	N T S (PS-PL)

2. How to administer tests N T S (PS-PL)
3. How to interpret tests N T S (PS-PL)
4. How to select testing instruments T S (PS-PL)
5. What conclusions can be drawn from tests T S (PS-PL-GS-GL)

B. With Administrators

1. What evaluation services are needed N T S (GS-GL)
2. What resources are needed for a program T S (GS-GL)
3. Where should program revision take place T S (PS-PL-GS-GL)
4. What a specific program costs T S (GS-GL)
5. What are specific program outputs T S (PS-PL-GS-GL)
6. What program components are failing to produce T S (GS-GL)

Application Parameter II Design Activities

A. Evaluation to standards

1. Of program components T S (PS-PL)
2. Of programs T S (PS-PL)

B. Evaluation to a relative criterion

1. Of program components T S (GS-GL)
2. Of program T S (GS-GL)

Application Parameter III Decision-Making Activities

A. For the revision of programs S (PS-PL)
B For the selection of programs S (GS-GL)
C. For Quality Control S (PS-PL-GS-GL)

1. Need satisfaction S (PS-PL-GS-GL)
2. Resource utilization S (PS-PL-GS-GL)

Instructional Alternatives

Two alternative routes are being designed for the students to reach the performance criteria. These two routes will vary over parameters with some, but little variation within the parameters. The alternative systems will be briefly described for each parameter.

Parameter	Instructional Routes
Assessment Parameter I	1. Lecture and instructional materials

	route where scheduled lectures, demonstrations and **exemplary** materials will be offered. 2. Independent study and sequenced practicum activities route -- where trainees will receive suggested materials and assignments designed to lead up to criteria measures.
Assessment Parameter II	1. Discussion and assigned readings route where seminars are held on specified topics preceeded by reading assignment list. 2. Programmed instruction route -- where programmed materials on each topic will be developed.
Assessment Parameter III	1. Lecture and field trip route -- where topics are discussed and explained through lecture and systems are observed on field trips. 2. Simulated systems route -- where trainees are given suggested readings and problems to be solved on independent study basis.
Assessment Parameter IV	1. Lecture and guided practicum route, where topics are covered and problems are assigned for solution and correction. 2. Field experience and practicum route - where students will be related to actual problems in the field and will work with advanced students toward solution.
Analysis Parameter I	1. Work experience and professional counseling route. 2. Independent study on simulated problems route.
Analysis Parameter II	1. Statistical classes 2. Practicum application route where student is assigned to project with statistical roles.
Analysis Parameter III	1. Discussion, programmed materials, and problem assignment route. 2. Involvement in planning projects at the university, field work, and simulated systems work.

Application Parameter I	1. Instructional materials and role playing roles at the university. 2. Field experience under the guidance of university personnel.

MEDIA APPENDIX

PERFORMANCE CRITERIA

The following are the performance criteria for the media specialist's various roles. Each performance is followed by the suggested instructional alternatives.

The following is the list of possible instructional alternatives for use in meeting the performance criteria.

1. Formal course work
2. Lectures
3. Independent study
4. Apprentice learning
5. Programmed texts
6. Computer assisted instruction
7. Laboratory observation
8. Seek and find -- experimentation and discovery learning.

MEDIA SPECIALIST AS TECHNICIAN

1. Operation of equipment

The student should be able to:

A. Operate a record player. This includes plugging in machine, turning on power, selecting correct turntable speed and proper stylus for record, adjusting tone-arm weight control, starting turntable, placing stylus in run-in groove on record, and adjusting volume and tone controls for optimum listening satisfaction.

B. Operate a tape recorder. This includes plugging in power, turning on power, placing full and empty reels on correct spindles, threading the tape dull side facing the heads.

   1. Recording -- plug in the microphone into input jack, engage recording control, adjust recording volume until indicator is appropriately activated.
   2. Rewinding -- stop machine, check for tautness of tape between reels, engage rewind control.
   3. Playing -- engage playing control, adjust volume and tone to satisfactory listening level.

C. Operate an opaque projector. Includes placing projector on stand, plugging in power, placing material on platen face up with bottom of the picture toward the screen, turning on motor and lamp, adjusting tilt and level by extending legs, focusing and moving projector toward or away from screen to obtain desired image size.

D. Overhead projector. Attach the head assembly to the head support, adjust top mirror by turning mirror tilt knob, adjust focus until image is sharply defined, place material on transparency table.

E. Operate slide projector. Connect power cord, insert slide carrier, turn on lamp, move projector toward or away from screen to adjust image size, adjust vertical elevation by turning tilt knob, bring image into focus, insert slides upside down into carrier, push slide changer to carry slide into projector.

F. Operate a motion picture projector. Attach speaker and power cords at the projector, place speakers, connect power cord, turn on amplifier, place reel arms in correct position, attach reel drive cables, turn on motor and lamp, elevate front of machine and adjust distance from screen for image size, place full reel on feed spindle, feed film through correct film path as indicated on the machine, insert film leader into take-up reel slot, turn on machine, adjust sound volume and tone, correct frame line.

G. Operate television receivers. Plug in cord and turn on power, adjust volume, focus image by making fine tuning adjustments, adjust brightness and contrast controls, adjust frame line with vertical control.

Criterion and evaluation: all operations and adjustments must be performed to the mutual satisfaction of the student and his advisor, or the student must go through the programmed text or the computer lesson without error.

Alternative instruction procedures: 4,5,6,7,8

II. Demonstration of knowledge of operational theory of media equipment. It is our belief that if one understands the principles upon which various items of media equipment operate, he will be able to make adjustments and minor repairs that he was not specifically trained to make. This section includes criteria for the demonstration of an understanding of these principles.

For each of the pieces of equipment mentioned in section I, (record player, tape recorder, opaque projector, overhead projector, slide projector, and television receiver, the student should be able to name the visible parts of the equipment and indicate by either a sequential oral explanation or diagram, what happens to the light and/or sound between the tape, film or slide and the final video or audio projection or amplification.

Criterion and evaluation: the student must name all visible parts, and indicate the path of light or sound to the satisfaction of the advisor, or must complete the programmed text or computer lesson without error.

Alternative instructional procedures: 1,2,3,5,6.

MEDIA SPECIALIST AS PRODUCER

The media specialist should have the following skills with which to assist the faculty of his school.

I. Production of overhead transparencies by three methods: (1) heat process, (2) hand made, (3) diazo (ammonia) process, adhering to the standard frame opening work area 7 1/2" high by 9 1/2" wide and utilizing letters at least 1/4" tall.

   A. Given a sheet of clear typing paper which is not treated in any way, and a set of number 2 lead pencils, the media specialist should be able to prepare a master for reproduction through the Thermofax (or any heat process machine) by:

      1. Drawing firmly on the paper with the pencil.
      2. Making all lettering at least 1/4" tall.
      3. Keeping all letters plain and extraneous shadings to a minimum.
      4. Selecting the correct film to be used for the transparency.
      5. Placing the film on top of the drawn master, with the cut corner in the upper right hand.
      6. Setting the machine to the white setting.
      7. Running the transparency and producing it.

   B. Given sheets of clear plastic or acetate or an acetate roll attached to the stage of an overhead projector, the media specialist can make on-the-spot transparencies by:

      1. Drawing directly on the acetate sheet or roll with any appropriate marking instrument. Appropriate marking instruments are: felt-tip pens, magic markers, special overhead projector pencils, fiber tipped pens if the line they lay onto the surface of the acetate is a firm, dark line, not a line marked with several bubbles.
      2. Utilizing tapes (transparent or opaque) commercially made for laying off lines on a transparency in 1/4", 1/8", 1/16", or 1/32" widths.
      3. Utilizing pressure sensitive patterns or colors by laying them smoothly down on the acetate surface and pressing them in place without air pockets. Pressure sensitive patterns or colors are usually in connection with transparencies where large areas are designated by heavy black lines and where emphasis is desired. Application of the color is characterized not only by the absence of bubbles when the transparency is projected by neatly trimmed edges which do not allow the color or patterned area to bleed into a neighboring area.

C. Given diazo, light-sensitive film, an exposure box, jar of ammonia fumes, artists' tracing paper, and several styles of letters, the media specialist should be able to produce a permanent, color transparency through the diazo process:

1. By taking the artists tracing paper and laying out lines on it, either in heavy pencil or india ink or opaque tape, because anything opaque will leave an image on the diazo film by blocking light rays which would burn away the surface coating of the film.
   Or using special typewriters or letter guide sets of at least 1/4" in height, the artist can letter or number the pattern directly onto the tracing paper master.
   Or, by using paper cut-outs can achieve particular effect on the diazo film, if the paper is opaque enough to block the light from the surface of the film.
   Or by using commercially prepared masters (Keuffel and Esser, 3 M, Texas Education Agency) as a beginning for the transparency process.
2. By selecting the appropriate colored diazo film from the supplies on hand. The color of the diazo film can be determined by reading the labels on the packages.
3. By removing the diazo film from the envelope so that the notched corner is in the upper right.
4. By placing the master face-down on the diazo film in contact with its treated surface.
5. By placing the master-film sandwich into the light box to expose it. This process may be done several ways depending on the type of machine used. The ordinary way would be to place a glass plate atop the master film sandwich and place this along with a backing board into the exposure box. This method is used if a proto-printer is the exposure box. If the diazo film is exposed in a Ozalid machine then the media specialist should be able to operate such a piece of equipment and produce transparencies from it by repeating steps a, b, c, d. After this point, the master-film sandwich is inserted into the light-exposure portion of the machine, with the master up and exposed. Film is separated from the master and the film alone, with the notch in the right-hand corner is covered with tracing paper to protect it from scratches and is fed into the ammonia developing section of the Ozalid machine.
6. After exposure, the master must be removed from the film and saved. The film is rolled (proto-printer) and placed in a jar filled with ammonia vapors. The image on the film will develop upon contact with the ammonia vapors. Degree of development is judged by inspection of the image visually for the clear, sharp, bright colors of diazo film reproduction. Light images are results of over-exposure; background (fuzzy) images are the results of old film or too little exposure.

Criterion and evaluation: the student will produce at least three transparencies by each method. Student and advisor will examine the projected transparencies and must agree that each is free from serious flaws in workmanship and judgment.

Alternative instructional procedures: 1,4,5,6,7.

II. Production of simple graphics' materials for flannel boards, bulletin boards, and general display and for addition to the instructional materials' collection.

A. Given cardboard, patterns for tracing, glue and magnets, the media specialist should be able to make cut-out figures which would be able to be used on metallic surface chalk boards by tracing the desired pattern on the cardstock, trimming the pattern , adding color and then affixing a small magnet to the rear of the cut-out figure.

B. Given still pictures, backing, rubber cement or drymount tissue, the media specialist should be able to prepare a series of mounted pictures by:

1. Cutting the pictures to size desired.
2. Centering the pictures on mounting board, making sure the bottom margin is larger (deeper) than the top and the side margins are at least 1/2". In this case, the bottom margin would be 1" deep.
3. By applying rubber cement (in the rubber cement method) to the back of the picture to be mounted, and to the marked surface of the mounting board and then bringing both cement coated surfaced together slowly and evenly, or by using the dry mount press in this manner:

   a. Heat press to 270°. Heat tacking iron at "high."
   b. Placing the mounting board in the press for a few seconds to remove moisture. Repeating same procedure for picture. This will ensure a ripple free bond.
   c. Take a piece of mounting tissue, tack it to the rear of the picture to be mounted. Tacking is best done from the front of the picture.
   d. Trim any excess tissue protruding from beyond the edges of the trimmed picture. The mounting tissue should not show.
   e. Tack tissue-backed picture to mounting board in area marked, cover with which paper to prevent smearing and place in heated press (270°) for 20 seconds.
   f. Remove picture, remove paper and the picture is permanently mounted.

Criterion and evaluation: the student will produce at least three cut-out figures and mounted pictures. These must be judged to be of satisfactory quality, both technically and aesthetically, by both the student and advisor.

Alternative instructional procedures: 1,2,7,8.

III. Prepare and use photographic slides in teaching/learning situations.

A. Given a 35 mm camera, film, an exposure meter and electronic flash, the media specialist should be able to produce for the school and its faculty slide sets about local resources and school events.

1. By attaching the 35 mm camera to the appropriate microscope stand, and by attaching the proper close-up attachment for magnification (2x, 3x) the media specialist may photograph color slides of gross specimens in the science laboratory.
2. By utilizing the 35 mm camera or several 35 mm cameras throughout the school, the media specialist will be able to record student programs and events of note for use as records and for re-showing at open house. This may be done by utilizing the 35 mm camera, with indoor film for flash; the electronic flash, and suitable indoor calibration from a set scale. This scale will usually be found on the rear of the electronic flash gun. By varying the film from 35 mm color slide film to 35 mm print film, the media specialist can produce prints of the activities rather than slides.
3. By utilizing the Polaroid 110 A or 110 B or 800 series or 900 series, with flash, the media specialist can take photographs within the school. If the 3,000 speed film is used (type 47) then little or no flash will be required to produce prints in black and white of the activities covered. By using roll color film in these cameras (c) color prints may be obtained, but flash must be used because the speed of the film is slower.

B. Given a Kodak cartridge-pack 8 mm motion picture camera, film and willing subjects, the media specialist can, through his media class, teach basic elements of motion picture production. With the camera easily used, loaded and held, students can then participate in the recording of school events as well as the recording of their own "inventive" moments.

Criterion and evaluation: the student will produce a set of at least ten slides. The student and advisor will examine the projected slides and must agree that they are technically and aesthetically satisfactory.

Alternative instructional procedures: 1,2,3,4,5,6,7.

IV. Splicing

A. Given the broken 16 mm motion picture film, the media specialist should be able to splice the ends of the film in a conventional film splicer in this manner by:

1. Opening the splicing machine to reveal the small prongs pointing upright.
2. Placing the broken pieces of film on the prongs on either side of the division in the machine. The film will overlap. The dull (emulsion) side will be up.
3. Close both covers of the machine.
4. Raise the cutter bar and trim, separately, each piece.
5. While keeping the left portion of the machine closed, raise the right section. This will reveal the film.
6. Wet the film lightly.
7. Scrape away the emulsion with the blade-cutter.
8. Apply the special adhesive to the scrapped film.
9. Lower the right section and hold in place for a few moments.
10. Remove the hold-downs and remove rejoined film from machine.

B. Splicing of audio tape utilizing the "gibson girl" method. Given a broken audio tape and a "gibson girl" audio tape splicer, the media specialist should be able to splice the broken audio tape by:

1. Opening up the splicer by raising the cutter bar and the tape hold-downs.
2. Placing the audio tape, shiny side up, into the space provided for it and lowering each hold-down separately. Be sure the pieces of broken tape overlap.
3. Checking the cutterbar to see it is set at "cut" and then lowering it down onto the tape and pressing firmly.
4. Lightly blowing away the cut parts of the tape.
5. Pressing the white mending tape into place on the shiny surface of the audio tape.
6. Setting the cutterbar to "trim" and lowering it onto the tape, pressing firmly.
7. Raising the cutterbar and then the hold-downs and removing the mended tape.

Criteria and evaluation: the student will perform two splices of each type. The student and advisor will check the splices visually and aurally and the splice must be nearly invisible to the naked eye, and the splice must make no recorded "pop" when the area is played over. Visible splices, poorly joined pieces of tape, thick splices tend to produce this electronic pop or click on a tape recorder.

Alternative instructional procedures: 4,5,7.

VI. The media specialist will be able to help faculty make audio recordings by assisting them and positioning microphones for them. Given a tape recorder and microphones and necessary patch cords and tapes (blank), the media specialist will be able to:

A. Place faculty at microphones so that they may talk and record at a normal vocal level. This level is with the face about

6" to 11" away from the microphone. Select the proper speed for the recording. 3 3/4 IPS is the recommended speed for recording vocal selections only. 7 1/2 IPS is the tape speed recommended for music.

B. Dub a record (disc) onto a tape by connecting the record player and the tape recorder together via a patch cord from the external speaker jack of the record player to the input jack of the tape recorder.

C. Make several copies of a tape from one master copy on a tape recorder and then connecting other tape recorders to the master recorder by bridging jacks, from the output jack of the first to the input jack of the second, and so on.

D. Record music from television or FM/AM radio by means of alligator clips. These tie on to the speaker terminals.

Criterion and evaluation: the student will make one copy of each of these four types. Student and advisor must agree that all tapes are of a consistent and satisfactory listening quality.

Alternative instructional procedures: 1,4,7,8.

VII. The media specialist will be able to determine the mechanical condition of equipment and make needed minor repairs to keep equipment serviceable and usable for the faculty. Given the several types of projection and non-projection equipment in his inventory, the media specialist should be able to tell:

A. When projection lamps are weak or burning out by the gradual darkening which takes place on the glass envelope of the lamp nearest the filament. Work bulbs also tend to bulge in the center nearest the hottest spot on the filament with repeated use.

B. That the sound lamp (exciter) is not working in motion picture sound projectors by turning on the amplifier and after suitable warm-up period (half-a-minute) by placing a piece of paper between the exciter and the sound drum and listening for a scraping sound.

C. Fuses are burned out by removing the exterior cap marked "fuse" and examining the metal ribbon within the glass envelope of the fuse to see whether it is burned out or still whole.

D. A motion picture projector is improperly threaded by allowing the film to slip gently between the thumb and forefinger of his hand from the full reel to the gate and then allowing the film to slip between the thumb and forefinger of his hand on its way to the take-up reel. Smooth sprocket holes in each instance means a properly threaded projector, but smooth sprocket holes going into the gate and rough sprocket holes coming out means that at sound speed, 24 frames per second, the projector is improperly threaded and tearing film at the rate of 10 feet per second.

E. That a bad needle is causing poor sound on the record when the voices sound muffled.

F. That a tape recorder is running at the wrong speed when the tape sounds like either Donald Duck (too fast) or a slow, draggy, overly deep voice. (Too slow)

Criterion and evaluation: given equipment exhibiting these various failures, the student should be able to correctly diagnose and recommend the proper correction for each failure to the satisfaction of the advisor.

Alternative instructional procedures: 1,4,7.

G. The media specialist will have the ability to specify and select the proper light control devices necessary to vary the amount of light entering the room through windows. Equipment use will govern the types of light control needed during the day.

1. Use of the opaque projector requires a totally dark room because of its low reflection qualities.
2. Motion picture, filmstrip, slide projectors may be used in partially lighted rooms, because they are direct-projection machines and the light shines through the material to be projected.
3. The overhead projector because of a large amount of light output over a large surface can be used in a fully-lighted room.

Criteria and evaluation: Given a hypothetical classroom with one wall of windows, the instructional media specialist will be able to select the proper light control mechanism in terms of needs of the curriculum, budget, and efficiency, and will justify his choice to the satisfaction of his advisor.

Alternative instructional procedures: 1,4,7.

MEDIA SPECIALIST AS PURCHASER AND CATALOGER

I. Selection of proper equipment for use within the classrooms of his building.

A. The media specialist should have the ability to select the proper projection screen for the classroom shape in which viewing is to be done.

1. The height of the screen is determined by the height of the ceiling of the room. Screens should be mounted as near to the ceiling as possible.
2. Screens may be of several materials each with its own incidence of reflection. These materials are: glass beaded, matte white, aluminized lenticular.

    a. Glass beaded screens have a very narrow axis for bright image reflection. This angle of reflection is approximately 6° each side of center for a total of 12°. This type of screen is suited for a long narrow room.
    b. Matte white screens have a viewing angle of 30° to each side of the center axis and this gives a field of view 60° or more before image fall-off hampers view. This type of screen is suited to wide, shallow rooms.
    c. Aluminized lenticular screens also have wide angles of vision and are good for wide, shallow rooms. Their maximum angle of view is about 70° total.

Criteria and evaluation: given the varied dimensions of the rooms in any school building, the media specialist will select the proper screen for viewing projected images.

Alternative instructional procedures: 1,2,3,4.

MEDIA SPECIALIST AS DECISION MAKER

It is extremely difficult to define performance criteria to evaluate the media specialist's ability to integrate media effectively into all areas of the curriculum. It would be specious to attempt to make value judgments about whether a particular employment of media at a particular time was effective until we had first clearly defined our objectives in that situation. Development of this integrative ability is, therefore, essentially development of decision making abilities.

In order to encourage the development of these abilities in the media specialist, we would construct some experiences for the student which would require him to practice decision making. Rather than defining objective performance criteria, evaluation of performance in these experiences would consist of the students discussing his decisions with a panel of advisors. The purpose of the discussion would be to make the student more aware of why he made the decision he did and to speculate about the consequences of his decision and of alternative decisions.

Such an experience might be constructed in this way. The student is to assume that he has been called upon to act as a curriculum advisor for social studies. He is given the course outline, objectives, instructional materials and information specifying grade size of class and classroom and class schedule. The student is then asked to describe two or more comprehensive programs for the use of media in this class. This experience could also be programmed and given by CAI, with complex branchings for the various decision frames.

The criterion here would be agreement between student and advisors that the student sees possibilities for original and innovative use of media in the curriculum.

Alternative instructional procedures: 1,3,4,6.

MEDIA SPECIALIST AS ARTIST

If we can assume that a working definition in this case would be for the word "art," "skills in adapting means to an end," then we would have a basis for a distinction in the use of this term as a role for media-man.

The artist is the person who is skillful in adapting the means (media) to the end (successful pupil learning). In order to do this, the media-man as artist must have a knowledge of selection, presentation, and use skills which involve media on several levels. On the presentation level, he must know which medium does the job most effectively, and must be able to select from available instructional materials. He must know how to "orchestrate" media, to include it, to vary it, to leave it out of certain lessons when this is necessary. On the production level we deal with media-man as an artist in the "technique" sense of the word.

The media specialist must have a sense of balance and proportion (space arrangement) to produce adequate visuals. He must know when not to crowd visual presentations whether they are for conventional (bulletin board, flannel board, chalkboard) display areas or for electronic display areas (overhead projection, accepted criteria for lettering standards in production of overhead transparencies and film titles. He must observe proportion standards which have been set for the successful mounting of still pictures for static displays and study-print sets.

Thus the role of artist takes on a two-fold meaning, both levels of the world closely intertwined, yet observable. We are not insisting that media-man be a graphic artist of the highest calibre, but what we are suggesting is that media-man in his role as artist, know the basic principles of high-quality media use, and that he also know and apply the basic principles of media construction.

We would not attempt to apply quantitative judgments to the artistic aspects of the media specialists role. Because such things as originality and creativity are by nature subjective, the evaluation of these qualities would also be subjective.

To demonstrate his ability to function as an artist, the media specialist would produce a portfolio of his work in media production. This portfolio would include film, audio and video tape, photographs, overhead projector slides, dry mount pictures, 35 mm slides, and reproductions made by various copying machines. He would attempt to produce a portfolio which would demonstrate both his technical proficiency and his ingenuity.

The portfolio would be reviewed by a panel of supervisors and the student. The criterion here would be agreement between the student and the panel that the work is of consistently high quality and shows imaginative use of media.

Alternative instructional procedures: 1-8

SUPERVISION APPENDIX

Example Performance Criteria

I. Observation methods

Objective: The supervisor should learn to use a number of observation instruments designed to measure different aspects of classroom teaching.

Criterion A. The supervisor will observe a 10 minute segment of a classroom discussion using the Flanders' interaction matrix. His record and analysis of the verbal interaction will be compared to that of an expert trained in the use of Flanders' observational system and must meet .85 rater reliability.

Instructional Alternatives:

1. Read Interaction Analysis in the Classroom: A Manual for Observers by Ned Flanders. Practice rating the verbal interactions during live classroom observations. This would be done in groups of three to compare the ratings after the observational period.

2. Read Interaction Analysis in the Classroom: A Manual for Observers by Ned Flanders. Practice rating the verbal interactions of a microteaching class recorded on videotape. The videotape will have been pre-rated by experts using Flanders' Interaction Analysis. The trainees will compare their ratings with the experts' rating and receive counseling if their ratings differ appreciably.

Criterion B. The supervisor will observe a 20 minute videotape recording of a teaching demonstration and rate the teacher's performance using the Stanford Teacher Competence Appraisal Guide. His record will be compared to that of three experts trained in the use of STCAG and must meet .80 rater reliability with the mean rating of three experts.

Instructional Alternatives:

1. The supervisor will practice rating teachers on videotape and compare his ratings with those of experts who also had rated the lessons.

2. The supervisor will practice rating teachers on videotape with other supervisors and compare his ratings with theirs. A discussion on points of disagreement will take place.

Criterion C. The supervisor will observe a 5 minute microteaching demonstration and rate the teacher's performance using the Stanford Teacher Competance Appraisal Guide. His record will be compared to that of three experts trained in the use of STCAG and must meet .80 rater reliability with the mean rating of three experts.

Instructional Alternatives:

1. The supervisor will receive instruction in the skill of asking probing questions and will practice observing and rating teachers using the categories of probing questions.

2. The supervisor will take a programmed instruction on probing questions, see a model of a teacher demonstrating probing questions, and practice rating videotapes of teachers using this skill.

Criterion D. The supervisor will orally explain to an expert the 13 categories of the Stanford Teacher Competence Appraisal Guide to the satisfaction of the expert.

Instructional Alternatives:

1. The supervisor will view a videotape of an explanation of the STCAG.

2. The supervisor will take programmed instruction in defining the STCAG.

II. Feedback Techniques

Objective: The supervisor should be aware of several objective sources of classroom feedback, be able to organize data gained from these sources, and interpret this data into meaningful suggestions for teacher behavior modification.

Criterion A. The supervisor will set up a 35 mm time-lapse camera in a classroom and record still pictures at the rate of every 90 seconds. After the shots are developed the supervisor will analyze the photographs determining the attending behavior of each child based on visable cues such as body postures, facial expressions, directions of gaze, and attention to the task. His analysis will be compared to an expert's analysis of the same photographs.

Instructional Alternatives:

1. The supervisor will observe a demonstration of how to set up time-lapse photographic equipment. He will look at photos of student attending behavior categorizing them in terms of attending or not attending. The photos will already have been rated by an expert and the supervisor will compare his ratings with the expert's.

2. The supervisor will read a booklet on how to set up the time-lapse equipment. He will look at 3 photos of the same scene, taken at different angles. From these 3 photos he will see if the attending behavior appears the same in each of the photos. This training would be repeated many times.

Criterion B. The supervisor will administer the Stanford Teacher Competence Appraisal Guide to the students of a teacher in order to get their ratings into a report of teaching effectiveness. A trained supervisor will observe the administering of the Appraisal Guide and will evaluate the supervisor's report of the students' ratings regarding the generalizations he draws.

Instructional Alternatives:

1. Supervisor will practice administering the STCAG to students in a microteaching session and organizing their comments into a report.

2. Observe an experienced supervisor perform the criterion task.

Criterion C. The supervisor will view a twenty-minute lesson on videotape, identify pertinent segments of the lesson which relate to a particular technical skill of teaching, e. g. reinforcement techniques, the use of probing questions, and use these segments of the Videotape in a critique session with the teacher. The supervisor will be evaluated by a trained supervisor on his ability to identify pertinent segments of the videotape and his ability to use these segments effectively (determined by teacher reactions) in the critique.

Instructional Alternatives:

1. The supervisor will observe videotape segments and will practice analyzing them from the perspective of specific teaching skills.

2. The supervisor will observe an experienced supervisor meeting the criterion.

III. Counseling Techniques

Objective: The supervisor must successfully demonstrate the ability to use direct, indirect and nondirect supervisory styles.

Criterion A. After viewing a 5 minute microteaching lesson the supervisor will select the one aspect of the lesson to discuss, and will use a direct style of supervision where he analyzes the lesson and makes specific suggestions for teacher behavior change. His critique session will be observed by an experienced supervisor who will evaluate his style.

Instructional Alternatives:

1. Supervisor will see video tape models of supervisors using a direct style of supervision A second sound track will be used to highlight salient aspects of the model supervisor's style.

2. Supervisor will practice using a direct style in several microteaching situations. His critique will be videotaped and analyzed by an expert.

Criterion B &C: The same criterion will be met for indirect and nondirect style.

Instructional Alternatives:

The same instructional procedures will be used for indirect and nondirect styles as will be used for the direct style.

IV. Knowledge of Paradigms of Teaching

Objective: The supervisor will gain operational knowledge of a paradigm of research into teaching.

Criterion A. The supervisor will write a paper applying a paradigm, including either Mitzel's, Smith's, Ryans', Stone-Leavitt's, Rundle's, and Stolurow's, to an actual classroom situation. The paper will be judged on the analysis of the classroom situation and its correct interpretation according to whichever paradigm is selected. The evaluator will be competent in the area of research into teaching.

Instructional Alternatives:

1. Programmed learning presentations of the six paradigms will be developed and made available to the participants.

2. Supervisors will read Gage's chapter in the Handbook of Research on Teaching dealing with paradigms of research on teaching.

V. Supervisory Strategies

Objective: The supervisor will become conversant with several theories of supervision.

Criterion A. The supervisor through a small group discussion his familiarity with focused supervision, critical incidence supervision, conventional supervision, direct, indirect, and nondirective supervision. The strong and weak points of each should be discussed. Participants' knowledge will be evaluated by the group leader, himself experienced in all six theories.

Instructional Alternatives:

1. A lecture presentation will be given to the supervisors defining the three styles, and distinguishing between them.

2. Written papers will be prepared and distributed to the supervisors describing each of the six theories of supervision.

PRE-SCHOOL APPENDIX

PERFORMANCE CRITERIA

1. Physiological - Knowledge

Performance

Candidate will demonstrate knowledge of physical growth and development of children.

Criterion

Given an objective test on the physiological developmental stages of growth and development from the ages of conception to six years, candidate will pass the test with a correct score of 75% (low level), 95% (high level).

Instructional Alternatives

a) Systematic observation in schools, homes, or clinics.
b) Take a course in child development.
c) Read a prescribed list of books on child development.
d) Watch a prescribed group of videotapes and movies concerning child development.

1. Physiological - Contact

Performance

Given a group of ten pre-school children, candidate will interact with each for one half hour and categorize them as to physical development.

Criterion

Candidates performance will be compared to a predetermined classification of the children and rated as outstanding (high level) or satisfactory (low level) by a panel of three experts.

Instructional Alternatives

a) Practice with TV tapes of children who have been previously classified.
b) Visits to child clinics, schools, head start classes, etc.
c) Spend one year in residence in a child study center.

2. Psychological - Knowledge

Performance

Candidate will demonstrate knowledge of child psychology as it pertains to early childhood development.

Criterion

Given a series of essay examinations on various aspects of child psychology, i.e., abnormal, normal, learning theory, language development, concept formation, etc., candidate will pass with an outstanding performance (high level) or satisfactory performance (low level) as judged by a panel of experts.

Instructional Alternatives

a) Take appropriate courses.
b) One year of residence in a child study center, pre-school, head start center, etc.
c) Work with videotapes, movies and programmed materials.
d) Read a list of prescribed books.

2. Psychological - Contact

Performance

Given five psychologically impaired children, candidate must diagnose each difficulty and choose an appropriate course of action for each child within a five hour period with each child.

Criterion

Candidate's performance will be compared to a predetermined diagnosis and course of action and will be evaluated as outstanding (high level) or satisfactory (low level) by a panel of experts.

Instructional Alternatives

a) Practical work in a child guidance clinic.
b) A year of residence in a school, study center, Indian reservation etc.
c) Design, implement and interpret a research activity in child psychology

3. Sociological - Knowledge

Performance

Candidate will demonstrate knowledge of sociological aspects of child development within the realms of the environment, personal relationships, parents and in play situations within a variety of sub-cultural contexts.

Criterion

Given a series of essay tests concerned with six differing sub-cultures, candidate will demonstrate knowledge of the above realms and their effect on children with a score of outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Spend time living in differing sub-cultures of the country.
b) Work in an interdisciplinary intracultural children's home.
c) Observe and describe problem solving activities of children while at play.
d) Spend a year of residence in a specific sub-culture home.
e) Conduct research activity on parent-child relationships, cognitive and otherwise.
f) Conduct a longitudinal study of one child in one sub-culture.
g) Take appropriate courses.
h) Read a prescribed list of books.

3. Sociological - Contact

Performance

Given a group of six children from differing sub-cultures, candidate will appropriately analyse the social effects of the specific sub-cultures on the children in terms of the environment, personal relationships, parents and in play situations.

Criterion

Predetermined analyses will be compared to the candidates' with a rating of outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Candidate will spend time in residence in a variety of sub-cultures.
b) Candidate will conduct longitudinal studies of various children.

c) Five years of residence in a multi-cultural children's home.
d) Design, implement and interpret a research study on:
    1. Maternal teaching styles.
    2. Training of young parents.
    3. Interaction between children and their environments.
    4. Problem solving aspects of play activity.
    5. Developing games teaching social problem solving.

4. Perceptual - Knowledge

Performance

Candidate will demonstrate knowledge of visual, auditory and cognitive perceptual development of children.

Criterion

Candidate will pass a series of essay examinations on various aspects of perceptual development with a score of outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Take appropriate courses
b) Read a prescribed list of books
c) Practical work in diagnosing perceptual difficulties in a child guidance center.
d) Conduct research on perception

4. Perceptual - Contact

Performance

Given five children with perceptual handicaps, candidate will diagnose difficulties and prescribe appropriate action.

Criterion

Candidates diagnoses and prescriptions will be compared to predetermined diagnoses and prescriptions and be judged outstanding (High level) or satisfactory (low level) by a panel of experts.

Instructional Alternatives

a) Work in a child study clinic
b) Longitudinal studies of perceptually handicapped children.

c) Read a prescribed list of books
d) Design a test of perceptual abilities
e) Conduct research on perception

5. Cognitive - Knowledge

Performance

Candidate will demonstrate knowledge of cognitive growth and behavior in young children by presenting a six week lesson plan for nurturing same.

Criterion

Given an oral examination candidate will defend his lesson plan with a rating of outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Spend a year of residence in a pre-school
b) Take appropriate courses
c) Practice activities and examination of lessons in a curriculum center.
d) Design, implement and interpret a research activity dealing with cognitive growth and development.
e) Activity in a micro-teaching clinic

5. Cognitive - Contact

Performance

Candidate will diagnose three children's cognitive styles demonstrating appropriate evaluation and prescription techniques for the purpose of determining if a child is ready for a tool subject, i.e., formal instruction in beginning reading.

Criterion

Each diagnosis and prescription will be compared to a predetermined diagnosis and prescription and rated outstanding (high level) or satisfactory (low level) by a panel of experts.

Instructional Alternatives

a) Practice with videotaped materials
b) Spend a year of residence in a child study clinic
c) Carry out appropriate research activity
d) Take appropriate courses
e) Read a prescribed list of books
f) Activity in a micro-teaching clinic

6. Affective - Knowledge

Performance

Candidate will demonstrate knowledge of the affective domain and its nurture and manifestations in young children.

Criterion

Candidate will pass an essay examination dealing with moot characteristics of the affective domain with a rating of outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Spend a year of residence in a sub-culture, a children's home, or a pre-school classroom
b) Devise a taxonomy describing the affective domain
c) Devise an instructional curriculum for the affective domain
d) Participate in debate on defining the affective domain and whom is responsible for its nurture.

6. Affective - Contact

Performance

Candidate must demonstrate a non-structured, subtle lesson, dealing with some aspect of the affective domain, with five children, having previously stated his goals.

Criterion

Candidate will be observed and rated outstanding (high level) or satisfactory (low level) by a panel of experts.

Instructional Alternatives

a) Practice in a micro-teaching clinic
b) Participate in debates with children on affective domain topics.
c) Debate relevance of affective domain teaching or nurturing with fellow candidates
d) Read prescribed list of books
e) Visit Benjamin Bloom at University of Chicago
f) One year of residence in a pre-school classroom

7. Psycho-motor - Knowledge

Performance

Candidate will demonstrate knowledge of psycho-motor activities of children.

Criterion

Given an essay examination on the psycho-motor activities of children, candidate will pass with a rating of outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Participate in a research activity on psycho-motor development and nurture
b) Take appropriate courses
c) Teach in a pre-school situation for one year
d) Work in a micro-teaching situation
e) Read a prescribed list of books

7. Psycho-motor - Contact

Performance

Candidate will demonstrate ability to nurture psycho-motor abilities of children by diagnosing and teaching three physically impaired children.

Criterion

A predetermined diagnosis and prescription will be compared to the activities of the candidate and will be evaluated as outstanding (high level) or satisfactory(low level) by a panel of experts.

Instructional Alternatives

a) Practice in a micro-teaching clinic
b) One year of residence in a child study clinic
c) Design, implement and interpret a research activity in psycho-motor development
d) Take appropriate courses
e) Read a prescribed list of books
f) Study in a curriculum-materials laboratory
g) Practical work in a learning disabilities center

8. Psycho-linguistic - Knowledge

Performance

Candidate will demonstrate knowledge of psycho-linguistic abilities of children.

Criterion

Candidate will pass an essay examination on the psycho-linguistic abilities of children and be rated as outstanding (high level) or satisfactory (low level) by a panel of experts.

Instructional Alternatives

a) Read a prescribed list of books
b) Take appropriate courses
c) Practical work in a child study center
d) Practical work in a learning disabilities center

8. Psycho-linguistic - Contact

Performance

Candidate will demonstrate ability to administer and interpret, with five children, forms of the Illinois Test of Psycholinguistic Abilities or a comparable measure.

Criterion

Candidate will be observed in the administration of the test and have an oral examination on his interpretation and be rated as outstanding (high level) or satisfactory (low level) as judged by a panel of experts.

Instructional Alternatives

a) Appropriate research activity with a measure of psycholinguistic abilities
b) Practice in a micro-teaching clinic
c) Read a prescribed list of books
d) Take appropriate courses

SYSTEMS AND TECHNOLOGY APPENDIX

SYSTEMS AND TECHNOLOGY

Six data files are proposed as part of the information subsystems for the Model Elementary Teacher Educational Program. The general content of these files has been previously indicated in the main body of this report. The following listing indicates in as much detail as possible at this time the probably specific types of information which will be contained in each file. These files could be maintained either manually or by a digital computer. During the developmental stages of the Project, they could feasibly and perhaps desirably be maintained by manual methods.

MODEL ELEMENTARY TEACHER EDUCATION FILE DEFINITION

TRAINEE FILE

IDENTIFICATION INFORMATION
- Name
- Age
- Sex
- Date of Birth
- Identification Number
- Social Security Number
- Current Address
- Permanent Address
- Phone Number

HISTORICAL INFORMATION
- Academic Achievement
- Measures of Leadership - Clubs, Class Offices, Social Activities, etc.
- Measures of Intellect - Intellegence test scores

CURRENT SYSTEM ASSESSMENTS
- Psychological Factors
  - Attitudes
  - Habits
  - Interests
  - Motivation
  - Behavior
- Sociological Factors
  - Demographic variables
  - Ecological variables
- Intellective Factors
  - Academic Performance
  - Vocational Preference
  - Avocational Interests
- Subset of performance criteria to be met for teacher certification
- Pre-test of all relavent performance criteria
- Standardized test scores

CURRENT SYSTEM STATUS
- Trainees educational objective
- Performance criteria now attempting to meet
- Instructional alternatives currently engaged in
- Instructional alternatives currently scheduled for

PERFORMANCE CRITERIA MET
    For each performance criterion met
        Number of performance criterion
        Measure of achievement
        Instructional alternatives completed
        Instructional alternatives attempted

CATALOG FILE

LIST OF PERFORMANCE CRITERIA AND ASSOCIATED INSTRUCTIONAL ALTERNATIVES
    For each performance criterion
    Performance criterion number
        Description of performance criterion
            Instructional alternative options

    Instructional Alternatives
        For each instructional alternative
        Identification code for instructional alternative
            Description of instructional alternative
            Maximum total hours per week required
            Staff resources required
            Equipment required
            Code to signify if class constraint is involved
            Code to signify if equipment contraint is involved
            Queue of students waiting to schedule Inst. alt.

    Educational Objectives
        For each educational objective
        Identification number of educational objective
        Description
        Performance criteria associated with objective

EQUIPMENT FILE

FOR EACH TYPE-PIECE OF EQUIPMENT THE FOLLOWING INFORMATION WILL BE STORED
    Equipment Number
    Related equipment required when used
    Description of equipment

- Location of equipment
- Number of units
- Schedule of usage for each unit of equipment (availability)
  - Flag to signify if now in use
    - Termination time of present use
    - Time of next scheduled use
    - Termination time of next scheduled use
- Qualifications of operator for use
- Accountability requirements for use
- Status

STAFF FILE

- Name of Staff Member
- Staff identification number
- Capabilities of staff member
  - Code numbers of instructional alternatives
- Availability
  - Current load
  - Current allocation of time
    - Present professional load
    - Time of next scheduled change in professional load
    - Professional load at time of next scheduled change
    - Time schedule of future inst. alt. scheduled for

SYSTEM HISTORICAL FILE

FOR EACH TRAINEE WHO HAS OBTAINED A TEACHING POSITION

- Student Number
  - Performance criterion met
    - Instructional alternatives used
    - Measures of achievement
  - Post training information
    - Professional assignments
    - Measures of effectiveness

FACILITY FILE

- Facility number
- Total trainee capacity
- Location
- Schedule of usage
    - Code to signify if now in use
    - Termination time of present use
    - Time of next scheduled use
    - Termination time of next schedule use

FACILITY FILE

- Facility number
- Total trainee capacity
- Location
- Schedule of usage
  - Code to signify if now in use
  - Termination time of present use
  - Time of next scheduled use
  - Termination time of next schedule use

PERFORMANCE CRITERIA

SYSTEMS AND TECHNOLOGY

Recent developments in technology are making heavy inroads into the traditional conceptualization of the educational process. A few examples are: computer-assisted drill and practice in reading and mathematics in Palo Alto, California, and New York City; automated attendance accounting and test scoring in many school districts; information management for individually-prescribed instruction in suburban Pittsburgh. This developing technology implies the elementary teacher should have some basic knowledge and skills in the general area of systems and technology.

This knowledge need not be detailed or extensive. For example, a teacher should be aware of the kinds and uses of data processing documents he will be asked to prepare as a teacher. He should know how administrative data related to his pupils is managed and what reports can be obtained from it. Many of the standard applications of data processing in our society should be understood. These would include: the checking of income tax returns by the Internal Revenue Service; the use of credit cards, etc.

The following performance criteria should be considered for inclusion in the Model Elementary Teacher Education Program. Each performance criterion is followed by suggested measurement methods and instructional alternatives. In some cases, the same instructional alternatives can be used to meed several performance criteria. For example, the same seminar could be used to meet performance criteria 1 and 2. Where feasible, courses from other University schools and departments are suggested as instructional alternatives for students wanting to go into greater depth.

Instructional alternatives are further defined by a corresponding identification code. This code is for the most part fictitious and simply illustrates the concept that a unique identification is useful, and it is for present courses. Incremental time is composed of two factors; total estimated maximum weeks required to complete an instructional alternative and estimated hours required per week. These are expected times for an average student. Once the system becomes operational, they would be determined statistically. The trainee has the option of not engaging in any of the suggested instructional alternatives but simply meeting the criterion tests at the prescribed level. In many cases trainees will have previous knowledge such as programming experience in high school which will enable him to do this with ease.

One of the most effective methods of teaching information processing concepts is to use the computer as an instructional tool. Performance criteria in this section include as an instructional alternative, when practical, a computer assisted instruction (CAI) program as one of the options. Visitations to data processing centers (perhaps via videotape), hands-on programming experience and direct interaction with the computer should be provided when possible. Learning experience will be much more meaningful if concrete examples can be provided.

(1) Performance Criterion: cite two or more concrete examples of the effect of automation and new technology on today's and tomorrow's society. The trainee should be able to do this in oral or written form.

Instructional Alternatives:

a. Formal Courses:

Computer Science 131, Introduction to Computers and Programming. Industrial Engineering 256, Data Processing and Information Handling Systems. Education 449, Introduction to Educational Systems and Technology Incremental Time 18 weeks 6 hours per week.

b. Directed Readings: Read one or more of the following books--

Burck, Gilbert. The Computer Age. New York: Harper Torchbooks, 1965.
Favret, Andrew G. Introduction to Digital Computer Applications. New York: Reinhold Publishing Corp., 1965.
National Education Association. Automation and the Challenge to Education, Washington, D.C., 1962.
Scientific American. Information. San Francisco: W. H. Freeman and Co., 1966
Incremental Time 3 weeks 3 hours per week
Identification Code Ed. 201

c. Seminar; a three week seminar will be designed from Performance Criteria 1 and 2.
Incremental Time 3 weeks 3 hours per week
Identification Code Ed. 138

d. Computer Assisted Instruction Program:

A five hour program will be offered covering the concepts needed to meet performance criteria 1 and 2.
Incremental Time 5 weeks 1 hour per week
Identification Code Ed. 173

Measurement Methods: Trainee will be asked by a qualified staff member to, in written or oral form, meet the performance criterion at a level of 80 points on a 100 point scale. The trainee may also meet this performance criterion through a proposed related performance criterion in social studies.

(2) Performance Criterion: design a unit of study for elementary school use introducing children to the world of automation. This unit should be of sufficient length to develop an understanding of one example of the use to automation. For example, prepare a unit on newspaper type setting showing how the computer is used to generate program tapes for the linotype, or prepare a unit of study on processing of a bank check.

Instructional Alternatives: See Performance Criterion 1

Measurement Methods: Trainee will prepare a study unit which will be evaluated by School of Education staff member. If unsatisfactory, the unit must be revised and resubmitted.

(3) Performance Criterion: Use a computer time-sharing terminal in an interactive mode for manipulation of data pertinent to an educational situation the student is preparing for, and explain conceptually what the computer did with the data.

Instructional Alternatives:

a. Computer Assisted Instruction Program: A six hour program will be constructed which will instruct the trainee on how to use a computer terminal for data manipulation.
Incremental Time 6 weeks 1 hour per week
Identification Code Ed. 111

b. Formal Course: Education 449, Introduction to Educational Systems and Technology
Incremental Time 18 weeks 6 hours per week

Measurement Methods: Student will be observed turning the terminal on, calling the computer, calling the appropriate computer program, feeding in pertinent data, receiving responses. Student will prepare a written outline of the processing steps performed by the computer. This performance criterion may also be met through satisfactory achievement of a related performance criterion in Evaluation/Tests and Measurements.

(4) Performance Criterion: Describe the basic components of a computer; control unit, arithmetic unit, memory unit and input output units. List the functions of each of these computer components.

a. Formal Courses:

Computer Science 131, Introduction to Computer and Programming
Industrial Engineering 256, Data Processing and Information Handling Systems
Education 449, Introduction to Educational Systems and Technology
Incremental Time 18 weeks 6 hours per week

b. Directed Readings: Read one or more of the following books:

Awad, Elias M. Automatic Data Processing.
Englewood Cliffs: Prentice-Hall, Inc., 1966.
Sanders, Donald H., Computers in Business.
New York: McGraw-Hill Book Company, 1968.
Incremental Time 2 weeks 2 hours per week.
Identification Code Ed. 237.

c. Seminar: a four week seminar will be designed which will cover performance criteria 2, 4 and 5.
Incremental Time 4 weeks 2 hours per week
Identification Code Ed. 139

d. Computer Assisted Instruction Program: A twenty hour program will be constructed which will present the concepts necessary to meet performance criteria 4 and 5.
Incremental Time 5 weeks 4 hours per week
Identification Code Ed 128
Measurement Methods: Trainee will from memory draw the required schematic and list the functions. His drawing will be rated on a 100 point scale. Less than 80 points will constitute a failure.

(5) Performance Criterion: Describe the basic activities in an information processing cycle; recording, classifying, sorting, calculating, summarizing, and reporting. Explain the meaning of each by giving a concrete example.

Instructional Alternatives: See Performance Criterion 4

Measurement Methods: Trainee will describe the activities, in oral or written form. He will be rated by a qualified staff member on a 100 point scale. A score of less than 80 points will constitute a failure.

(6) Performance Criterion: Prepare a flow diagram for processing cycle of a typical administrative data processing application such as grade point average calculation or attendance accounting.

Instructional Alternatives:

a. Directed Readings: Read one or more of the following books:

Grossman, A. and Howe, R. Data Processing for Educators.
Chicago: Educational Methods Inc. 1965.
Preceding of College and Machine Records Conference-
published yearly
Incremental Time 4 weeks 2 hours per week
Identification Code Ed 231

b. Seminar

See Performance Criterion 4

c. Visitation: Groups of trainees will be taken on scheduled tours of two or more typical Education Data Processing Centers. The processing cycles of several applications will be explained in detail including sample forms used, in each application.
Videotape of actual productions will also be presented.

Measurement Methods: Trainee will draw a flow chart of an application using paper, pencil, and flow chart template. Work will be graded on a 100 point scale by qualified school of education staff member. Less than 80 points will constitute a failure. This will be closed book exam.

(7) Performance Criterion: write a simple computer program consisting of three or more steps in an appropriate language such as BASIC or FORTRAN in a limited time interval under a controlled environment. For example; write a program to read into the computer a student name then [illegible] it out.

Instructional Alternatives:

a. Formal Courses

Computer Science 121, Basic FORTRAN
Incremental Time 9 weeks 4 hours per week

b. Computer Assisted Instruction Programs:

A two hour program will be offered covering BASIC programming. This will lead trainees through a series of logical steps sufficient to build an understanding of computer programming.
Incremental Time 1 week 2 hours per week
Identification Code Ed. 135

Measurement Methods: Trainee will write, debug and run a simple computer program using a remote terminal in two hour period. He may have access to his notes and any programming manuals.

(8) Performance Criterion: write a simple, one skill three or four frame, computer assisted instruction lesson in an appropriate computer assisted instruction language such as COURSEWRITER.

Instructional Alternatives:

a. Computer Assisted Instruction Program: A three hour program will be constructed which will lead the trainee through the concepts necessary to formulate and write a very simple program. Incremental Time 3 weeks 1 hour per week. Identification Code Ed. 147

b. Video Tape Lecture: A two hour video tape lecture will be prepared showing trainee how to write a simple computer assisted program. Incremental Time 1 week 2 hours per week. Identification Code Ed. 148

Measurement Methods: Trainee will write, debug and run a simple computer assisted instruction lesson of three or four steps using a remote terminal in a two hour period. He will have access to his notes and any programming manuals desired.

(9) Performance Criterion: explain, orally or in writing, in a nontechnical manner how the information system guiding the student through his instructional processes works. It is anticipated that many trainees will gain a basic insight into the system operation through his actual experiences in the Model Elementary Teacher Education Program and will not have to engage in any of the instructional alternatives listed below.

Instructional Alternatives:

a. Directed Readings: Read a descriptive nontechnical manual which will be prepared on the Model Elementary Teacher Education Program's information and control systems.
Incremental Time 2 weeks 2 hours per week
Identification Code Ed. 232

b. Videotape lecture and Demonstration: a two hour tape will be prepared showing how the system operates.
Incremental Time 1 week 2 hours per week
Identification Code Ed. 111

Measurement Method: Written, oral, or machine-based questions on the operation of the information system answered to the satisfaction of a qualified School of Education staff member.

(10) Performance Criterion: Show awareness of the "systems approach" to an educational problem by indicating how a proposed solution would affect people and organizations not immediately involved in the problem. For example what is the total "system" implication when an elementary school initiates a unit of instructional normally taught in high school. The introduction of algebra in sixth grade mathematics has caused some adjustments in the high school algebra curriculum. Case material studied in the preparation for meeting performance criteria in other curricula may often provide trainees with this awareness.

Instructional Alternatives:

a. Directed Reading:
Watson, G. Concepts for Social Change. Washington: National Education Association, 1967
Incremental Time: 2 weeks 2 hours per week
Identification Code Ed. 238

b. Formal Courses:
Education 449 Introduction to Educational Systems and Technology
Incremental Time: 18 weeks 6 hours per week

Measurement Method: Instructor and student will agree on a problem. Student will outline in writing a solution to the problem, and indicate to the satisfaction of the instructor how the proposed solution will affect the organization in which the problem occurs, related organizations, and various people in these organizations.

(11) Performance Criterion: trainee will either use or describe the use of a device for information storage and retrieval, other than the computer. Examples of this type of device are; microfilm, keysort edge punched card systems, etc.

Instructional Alternatives:

a. Laboratory Sessions; a laboratory will be provided where trainees may actually experiment with one or more of these devices.
Identification Code Ed. 101
Incremental Time 1 week 1 hour

b. Education 449, Introduction to Educational Systems and Technology.
Incremental Time: 18 weeks 6 hours per week

Measurement Methods: Trainee will demonstrate to the satisfaction of a qualified School of Education Staff member how to use one or more appropriate retrival devices.

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